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"A TELEPHONE TRAGEDY," OR "WHY THE PROFESSOR WAS PEEVED"

A telephone tragedy in two chapters happened in Chicago the other day which will be useful to relate because it carries a real lesson to all service company managers.

To begin with, the Illinois Bell company, in the course of its routine collection system, discontinued service for a telephone station known as "Dorchester 5213." Chapter II of the tragedy came into being when it developed that "Dorchester 5213" was the residence telephone of James Weber Linn, professor of English at the University of Chicago, and who enjoys considerable local fame.

To make matters just as bad as possible, Professor Linn is also the conductor of a daily feature column in the Chicago Herald-Examiner (a Hearst paper) known as "Round About Chicago." He devoted his column in the next issue to telling his unhappy experience with the company, and then expressed his opinion of the company's system in burning words that weighed at least a ton apiece.

Being a famous professor of English and an unusually forceful writer, he did a complete job.

* * * *

The moral for telephone companies in this incident is that no collection system is adequate unless is provides some means for discriminating between subscribers. Of course, in handling a million subscribers' accounts there must be a system that will hand the proper penalty to delinquent rate-payers. Some officials will say that a company cannot allow non-payers to have service longer than is necessary to reach their names on the "cut-off" list.

This may be all right in theory, but the cold fact in this particular case is that the Illinois Bell might far better have supplied telephone service to all the gangsters in Chicago free of charge—including their sizable New York toll messages—rather than run the risk of offending Professor Linn and giving him the incentive to make the "squawk" that he did make. In fact, less harm would have been done had the "service discontinued" order been directed against the Illinois regulatory commission itself.

As showing the reactions of an irate subscriber—and, perhaps, indicating how service companies may avoid such explosions--Professor Linn's article is of interest. After detailing his conversation with the company regarding the cancellation of service, he says:

"Our particular telephone bill is dated on the 20th of the month. It does not come in the mail, but is slid under the door, along with circulars, advertising sheets and quite a bit of dirt. It requests payment for service rendered, and also payment in advance for service to be rendered during the ensuing month. My service was shut off 26 days from the date of the bill; in other words, before the expiration of the period for which a part of the bill was rendered.

"The telephone is a fearful and wonderful monopoly. Its attitude has been, and will continue to be, the public be damned. In my time I have made many complaints about the service rendered me. No one of these complaints has ever been considered. I have had my house shut up and the telephone unused for weeks, once for months, at a time; no allowance has ever been made for that, of course. I have paid my telephone bills regularly for 26 years; and the amount has run into thousands. The answer of the telephone company is, 'What of it?'

* * * *

"This of it. Inasmuch as the position of the company is unique, a complete monopoly position, a position without consideration, a position compared to which that of the gas and electric companies is one of friendship, and that of the business houses, large and small, one of benevolence, that position should be understood. The subscriber is entitled to such service as the company wishes to give, and the telephone company is entitled to such payments as it chooses to ask, at such times as it chooses to stipulate; and if the subscriber doesn't like it he can lump it.

"That may be a logical position. If so, the position of every other business in Chicago is illogical. Cash and carry stores, for instance, demand immediate payment for goods supplied; but they do not dream of charging in advance for goods to be supplied in the future. Credit, in all other cases, is an individual matter, depending upon reputation. And what makes this position the more remarkable is that the telephone company, of all businesses, has the best chance, by using its own service, to keep subscribers notified of their individual situation.

"As I say, that may be logical. All is fair in love and war. The telephone service has no element of love in it. Does the company prefer to be considered then

as at war with its subscribers? Its machinery in general is about the most ingenious I have ever noticed. Its machinery of public relations is about the most stupid. So far as public relations are concerned, the company is not a public utility. It is a public futility."

* * * *

There are many bitter words in the foregoing. Probably Professor Linn would be willing to soften some of them after his wrath abated a trifle, but, after all, there is considerable truth in what he says about a monopoly. His remarks prove that the public are quick to resent the idea that a monopoly controls their service facilities and all the more ready to find fault because of that fact.

No company, of course, in this day and age will admit that its policy is "the public be damned." In fact, no such company could exist. That some customers get this idea after dealing with utility employes is true, but in most cases the fault lies with both sides. However, it is the duty of the company employe to go the limit in removing such an impression, and in the building up of good will executives of service companies today are constantly urging this necessity on their employes.

* * * *

Professor Linn's criticism that "telephone service has no element of love in it" will apply equally to all business. Even in the Hearst paper that printed Professor Linn's article there is not much of "an element of love." Selling telephone service is based on business principles just as much as selling any other commodity. The only difference is that, nine times out of ten, there is more courtesy and personal consideration in the telephone business than in any other. Most business men admit that. Telephone courtesy has become proverbial.

One thing the irate professor emphasized that service companies should bear in mind is that the telephone company has unequaled opportunities to keep in touch with its customers and acquaint them with all that is being done to serve them efficiently. Such a procedure is helpful to friendly relations. Failure to do so may arise from a dislike to blow your own horn, but Professor Linn's caustic article shows that considerable more in this direction might be profitably done.

COMING CONVENTIONS

Ohio Independent Telephone Association, Columbus, Deshler-Wallick Hotel, April 15, 16 and 17.

Indiana Telephone Association, Indianapolis, Claypool Hotel, May 6 and 7.

Kansas Telephone Association, Topeka, Hotel Jayhawk, May 13, 14 and 15.

Pennsylvania State Telephone & Traffic Association, Penn-Harris Hotel, Harrisburg, May 13, 14 and 15.

Up-State Telephone Association of New York, Seneca Hotel, Rochester, May 21, 22 and 23.

Commercial Department Administration

Objective of Commercial Department to Increase Company's Revenue with Least Possible Increase in Expense—Some Suggestions for Increasing Business of Company—Qualifications Making a Successful Commercial Representative

By Elmer S. Palmer,
Del Rio & Western Telephone Co., Del Rio, Texas

The duties of the commercial department are many and varied, but the objective is to increase the company's revenue with the least possible increase in expense. "How to increase the revenue" should be the question motto of every commercial employe. Hence the main source of revenue is a highly-trained and efficient personnel. Every employe must be able to explain every phase of the commercial work, and must have a fair knowledge of subjects pertaining to the plant and traffic departments.

There are various departments within the commercial department, depending on the size of the exchange. In large offices, employes are responsible for their respective departments and certain routines can be outlined which will be of inestimable value; but in smaller offices the duties are not so clearly defined. It is the latter group that I consider the most difficult. In each case, however, it is the commercial department's dual duty to sell the service and to collect it.

Service should be sold by every one connected with the commercial department, but the burden naturally is upon the engineering and contract departments. I shall endeaver to explain some of the various methods used to produce desired results.

Until a few years ago, we could not see the necessity of seeking new business—we let the business seek us. It is true that a large percentage of our new business comes over the counter, but what about those would-be subscribers who have to be told of our service? We must keep abreast of the times, for an increase in facilities is required for an increase in population. We cannot depend on the newspapers to educate the people in the uses of the telephone. George W. Baker has wisely said that "In most every business the extent of the market depends upon the aggressiveness of the seller."

The contract and engineering departments are so closely associated with each other that one cannot function properly without the other. It is the engineering department that keeps a close check on available facilities, on contemplated construction, on progress of job orders, etc. When an applicant applies for service, the contract clerk must know whether service can be furnished or not.

The engineering department must be alert and have advance information concerning the growth of every section of town, so that proper facilities will be available when needed or applied for. Permits for new construction work should be carefully watched for two reasons: First, to be sure that adequate provisions are made to take care of any business offered; second, to be sure that the contractor makes provisions for telephone conduits, regardless of whether it is a business building or a small cottage.

The service survey has done more for the mutual benefit of the subscriber and the telephone company than anything I know of. It is here that the merchant has an efficient telephone man to go over his equipment and suggest changes when needed. No suggestion should be offered in the form of a criticism, but for the sole purpose of bettering your subscriber's service. The salesman should bear in mind that it is more important for his subscriber to have an adequate telephone service, than it is for him to have an adequate clerical force. People will wait for a busy clerk, but will not wait very long for an unanswered call.

After making a careful survey, the engineer presents one copy to the subscriber free of charge. "Surely," the latter soliloquizes, "if the telephone company shows me such courtesy unsolicited, I should be

courteous enough to read the survey carefully and thoughtfully."

It is here that the business executive has a concise report of every phase of the telephone business insofar as he is concerned. This report is as important as the balance sheet, for it shows him where the weak points are in order that he may remedy them.

If his equipment should be rearranged, suggest it regardless of the fact that in some instances revenue would be lost to the company. If the subscriber's business is small, it would be best to suggest a wiring plan in preference to a P. B. X. It must be born in mind that to overload your subscriber with unnecessary equipment ultimately leads to dissatisfaction.

Suggest such equipment that will serve his particular need, such as master stations, controlled stations, extensions, headsets, monophones, etc., if you are selling a wiring plan; additional P. B. X. stations, trunk lines, headsets, monophones, etc., if you are selling a P. B. X. system. Regardless of the class of service suggested, be sure that your subscriber has sequence numbers and that only one number is listed in the directory.

As previously mentioned, your subscriber should have ample facilities in the way of lines connecting with the local exchange. This is forcibly brought to his attention by data obtained by taking hourly peg counts, busy tests, and other data that will forcibly convince him that calls are lost due to his lack of equipment.

Make a study of his long distance calls and ascertain the cities or places most frequently called. From this data prepare a "First reference list" for your subscriber, giving particular emphasis to the telephone number of the distant stations. This will relieve him of a great deal of work and also be a saving to him, for, as you know, station-to-station calls are cheaper. We will also be benefited, for our operators can complete this class of calls more promptly, thereby being able to handle more business.

Prepare a sequence toll list so that he can place his calls with the least possible delay. In fact, do everything possible to make it so easy and enticing that your subscriber will unconsciously use the long distance service.

If your subscriber is a large toll user, suggest additional toll terminals, full-time talking service, leased wire service, typewriter service. Explain the keytown method of selling; in fact, cover the subject as a reporter covers a news item.

When selling service to a business firm, you are reasonably sure that there are ample facilities available, but not so with the residence subscriber. I consider this part of the job the most difficult.

Before beginning to make a real 100 per cent canvass of the residential section for new business, it is absolutely necessary to know where to go, what class of service you can sell in certain localities, and who are already subscribers. This information is compiled in advance by making a house-to-house check of the entire town, using a facility map furnished by the plant department.

When this work is completed, one can look at the map and tell where the best residences are, or the ones most likely to take service; where the new additions are and what sort of houses are being built therein; and where the working telephones are located. Valuable assistance will be rendered by the one in charge of this work if he places the letter "P" (Prospect) on the map, should he meet a prospect while compiling the information.

After the map is completed, the delayed service cards which the contract department keeps should be checked in order to spot them on the map. After this tedious preparation, the salesman is ready to begin his systematic canvass for new business.

Since you have advanced information concerning the users and non-users, it is easy to obtain a satisfactory interview. If your map shows that the house which you are approaching has a telephone, you do not have to take your time and that of your subscriber's by explaining the necessity of a telephone, but seek an interview relative to the service rendered. **Inspect the telephone**; ask the plant department to supply mouthpieces and broken parts when needed. It is surprising how many telephones one finds without mouthpieces.

Let the subscriber know that you are personally interested in the class of service furnished him. Do not be too hasty—talk about other things as well as those that pertain to the telephone, if you are led to do so. However, never miss an opportunity to suggest an extension for the second floor, or to explain the various miscellaneous equipment that will meet his particular need.

If you are in an area where facilities are limited, you should approach your prospect with the intention of selling party-line service. Where there are ample facilities but a great building program is going on, you should not sell individual line service, for all your equipment would be used to capacity, necessitating the installation of additional equipment.

Individual line service, however, should be sold when ample facilities are available and the building activities in that section are at a standstill. In fact, sell everyone service, but of a particular kind with respect to the facilities available. Avoid the saturation point as much as possible by selling party line and even service-line service.

Care should be exercised in areas where construction costs would be unwarranted, for the main business of the telephone company is to create assets and not liabilities. No company, however strong, can exist indefinitely on the latter. If the fixed capital is to be increased, the revenue must be forthcoming.

Do not miss an opportunity of explaining the advantages of long distance service. Explain the different rates, the inserts sent out with the monthly statement, and how easy it is to place a call. As in the case with the business subscriber, explain the service so thoroughly that he will place long distance calls with as much ease as a local call.

Try to sell program service if you have the equipment. This service is practically new and a number of companies have not installed the proper equipment for it.

After the canvass has been completed, you need not rest on your cars, for your work has just begun. Follow up the prospect list that you have obtained during the canvass. Put on a drive for extension telephones; sell all the miscellaneous equipment that you can, for they produce revenue with very little maintenance expense.

When the times comes for the issuance of the directory, large display space can be sold, principally to those subscribers whom you have helped with the service survey. Do not try to sell the front or back cover space to a struggling concern, but to one that has a firm financial standing in the community. It has been my sad experience to have a space of this sort cancelled, due to the inability of the subscriber to pay the rate for the six-month period, or for the period of the directory.

Never miss an opportunity to sell some space in the directory to anyone who wants to contract for it, for revenue is your objective. Directory space is sought after by many who recognize its real value as an advertising medium.

The classified section should produce a goodly portion of the revenue, so do not hesitate in selling space in that all-important section of the directory.

After the "selling" part has been accomplished, comes the "collecting" work on the part of the commercial department. When a subscriber offers a complaint, either oral or written, it should be at-

Great Future in Telephone Work.

There is a great future in the telephone business, both from the company's and the individual's viewpoint. Expansion creates opportunity; and opportunity will come to those who have prepared for it and have shown themselves fitted to assume new responsibilities.

Figures back up this assertion. Our company is spending from 60 to 70 million dollars a year in keeping well in advance of an estimated gain of 100,000 stations a year with its constantly improved exchange and toll service programs. It is estimated that there will be two million stations in service on the Pacific coast within the next five years.
—N. R. Powley, vice-president, Pacific Telephone & Telegraph Co.

tended to immediately, for nothing is so vexing to both parties as to have balances appearing on his bill. Regardless of the merits of his complaint, you should give him your undivided attention until a final settlement is made.

No set rules can be furnished in the adjustment of accounts. A few subscribers are always having trouble with the "heartless corporations," and care and good judgment must be exercised in adjusting accounts. To be too generous, you will leave the impression that you are not sure of your records; but on the other hand, to be too severe does not pay, even though you are sure that you are in the right in every case. The way in which you dispose of all adjustments is remembered by the subscriber.

In small offices a great percentage of the bills can be collected through the bank, thereby reducing collection expense and clearing the accounts monthly. A chief operator can do the commercial work as well as her own, and her pay can be prorated according to the time allowed for commercial work.

After the collections are in, attention should be directed to the selling of long distance service. Be doing something constantly that tends to increase the revenue.

In all the dealings with the public, one should have the thought of "Public Relations" foremost. The very word should be so fixed in an employe's mind that he will invariably think of his company whenever that subject is mentioned. Do not miss an opportunity of becoming the outstanding figure in all civic improvements insofar that they do not involve any political animosity.

Do not overlook the important medium, the newspapers of your territory, for you know that advertisements inserted therein serve more than the mere advertising.

THE BURIED TALENT

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

It seems almost tragic when young men and women attempt to fit themselves for a vocation about which they are not wholly enthusiastic. This is sometimes the result of undue parental influence. What seems even sadder is putting one's dream aside as unattainable, and accepting second choice, or what seems available. No wonder there are so many misfits in life!

I read an interesting little poem recently entitled, "Diploma Engineers," written by Charles S. Kinnison, that influenced me in writing this article.

It relates the tragic story of a young man who accepted chemistry as a life's vocation, although his heart was not in the choice. After several years of study and preparation, he received his diploma and engineering degree. Even though he had never gotten less than a "B" in his work, he felt no thrill in his accomplishment; instead, just a "measure of pride."

The ones who felt the thrill and joy which he should have shared were his Dad and Mother; and this made him feel like a cheat. It seems to me what mattered the most was that he had cheated himself.

Soon he must begin to apply that training, the accomplishment of his brain, in which his heart had taken no part. So he set out with "test-tube, beaker and flask, in search of some new thing, a useful and true thing," but the search gave him no joy. It was just so many hours of work to him and so, of course, could not hold his interest beyond the point of solving a given problem.

He summed up the disappointing adventures of his career thus:

"It's fine to be smart in your studies;
No glory from this will I rob.
But all of us know, sir,
It won't pay the grocer
Unless put to use on the job."

If our daily performance of duties ends simply as a day's work and we feel no enthusiasm in accomplishment, we are doing both those we serve and ourselves a great injustice. We are burying our talents. We are wasting life. If we continue daily driving our minds to a work we do not love, we will in time lose our incentive to do the work we yearn to do.

"Only when work leads us to a far-away vision, lovely and completely satisfying in its promise, is it tolerable. Every turn of the wheel that brings us nearer the goal is a fresh inspiration; every ache becomes a thrill."

—Angelo Patri.

MORAL: As Shakespeare remarked, "To business that we love we rise betime. And go to it with delight."

To be a successful commercial representative, I am told, one must have initiative, must be able to control his temper, must not become discouraged and must be a tireless worker.

Annual Meeting of Petroleum Industry Electrical Association.

The Petroleum Industry Electrical Association will hold its annual meeting in Dallas, Texas, at the Baker Hotel, April 21 and 22. This association is now composed of 19 major oil, gas and pipe line companies and is having a healthy growth.

The officers are T. J. McMahon of the Texas Pipe Line Co., president; F. S. Leonard, Shell Pipe Line Corp., vice-president; C. E. Foster, Oklahoma Pipe Line Co., second vice-president; H. E. Browne, Independence, Kans., Prairie Pipe Line Co., secretary; and W. T. Bulla, the Empire Companies, treasurer.

The object of the association is to harmonize and co-ordinate the principles and practices of the oil industry with respect to the construction, maintenance and operation of their power, telegraph and telephone communicating systems, for mutual benefit among its members and everything pertaining to electrical or communicating systems.

Ship-to-Shore Telephone to Link Majestic and Bell System.

Another transatlantic liner is now within reach of the United States telephones as service was opened between the S. S. Majestic of the White Star Line, while at sea, and Bell system telephones on April 4. The service is maintained from the time the ship leaves her dock until she is well on her way to Europe.

This is the second step in the American Telephone & Telegraph Co.'s ship-to-shore telephone service, connection having been established with the S. S. Leviathan of the United States Lines last December. As in the case of the Leviathan, the service is available as long as the ship is within range of the telephone company's radio stations, on outward and inward trips.

Fort Wayne (Ind.) Motor Club Installs P. B. X. Switchboard.

The February issue of "The Hoosier Motorist," a magazine for the car owners of Allen county, Ind., and published by the Motor Club, carried an announcement that the Fort Wayne Motor Club recently installed a new switchboard at its offices. The board is a 102 type P. B. X.

"This enables the club to provide direct telephone lines to the service garages," the article states. "Under the new arrangement the incoming lines will be free for the use of members calling in for service, the outgoing calls to the garages going over direct lines, not connected through the regular exchanges. Thus there will be absolutely no delay in dispatching calls to the garages and speeding up the service."

Service Now Opened to South America

A Short Wave Radio Telephone Circuit Linking the Two Continents of North America and South America Placed in Service April 3—Radio Transmission From A. T. & T. Co.'s Overseas Transmission Center at Lawrenceville, N. J.

Regular telephone service between North America and South America became available to the public on Thursday, April 3, at 12 noon, New York time. This new service interconnects over 20 million telephones in the United States, as well as all telephones in Cuba, and all the principal points in Mexico and Canada, with the telephones in the Argentine Republic and with the cities of Santiago in Chile and Montevideo in Uraguay.

The link between the two continents is a short-wave radio-telephone circuit 5,300 miles in length, connecting the overseas radio stations of the American Telephone & Telegraph Co. in the United States with the International Telephone & Telegraph Corp.'s stations in the vicinity of Buenos Aires, Argentina.

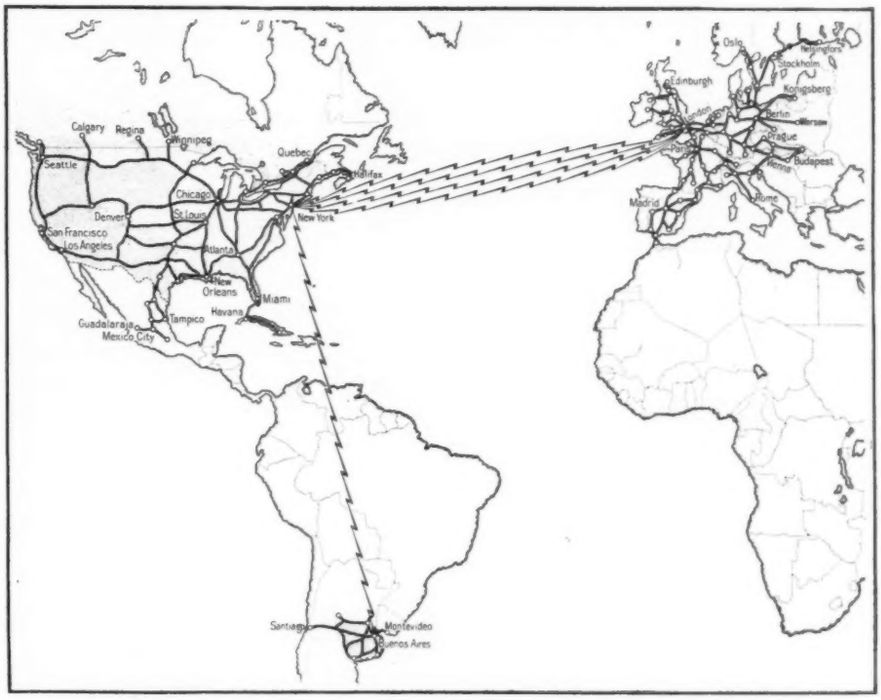
The service is in operation for eight hours daily or from 9 a. m. to 5 p. m., New York time. The rate for a three-minute conversation between New York and all points in the Province of Buenos Aires (the first South American zone) is $36. For calls to and from other parts of the United States, the same extra zone charges will be added to this base rate of $36 as are now added to the base rate for transatlantic service.

The second South American zone includes the remainder of Argentina and Montevideo, Uruguay. An extra charge of $1.20 is made for calls to this zone. For calls to zone 3, which includes Santiago, Chile, a charge of $3 is added to the base rate.

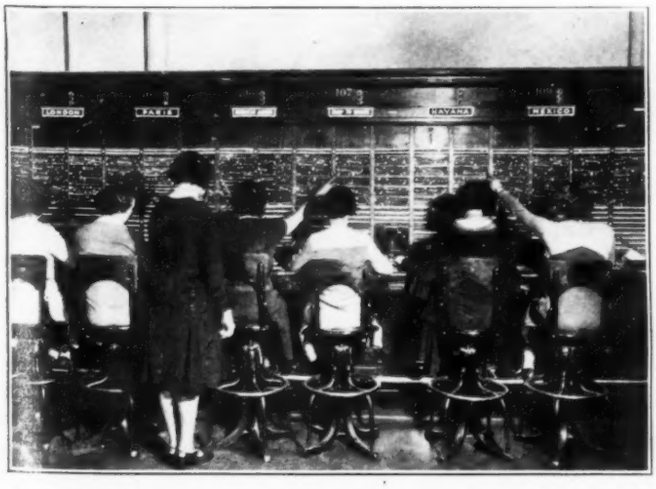
The radio link in the new service is 5,300 miles long. For the present there will be a single talking circuit composed of two radio channels, one for northward and one for southward transmission. These channels are operated on three different pairs of wave lengths, each pair being used for a different time of day.

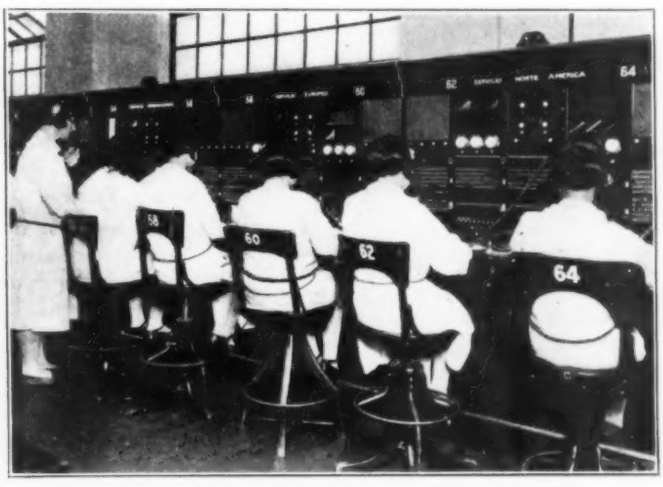
Running in a direction at a slight angle to the meridian and having its center near the Equator, the circuit encounters more favorable average ether conditions than exist on the transatlantic circuits, which makes for more reliable transmission. Because of these generally better conditions and also because of the comparatively short twilight period, extreme variations in quality of transmission over the circuit are materially reduced.

Radio transmission to South America is from the American Telephone & Telegraph Co.'s overseas transmission center at Lawrenceville, N. J. The receiving station for messages from South America is the Netcong, N. J., station which also receives



Overseas Radio Telephone Connections of the American Telephone & Telegraph Co. and Associated and Connecting Companies.





Special Switchboard in Long Distance Office of American Telephone & Telegraph Co., New York City, at Which All Overseas Calls of the Bell System Are Handled.—Special Switchboard in the Long Distance Office at Buenos Aires, Argentina, Where Telephone Calls With Points in North America, Spain and Countries in South America Are Put Through.

short-wave transmission from Europe. The transmitting and receiving stations of the International Telephone & Telegraph Corp., in South America are at Hurlingham and Platanos respectively, both stations being located a few miles from Buenos Aires.

In the north the two radio channels are brought together to form a complete conversation in the long distance office of the American Telephone & Telegraph Co. in New York, while in South America they are joined at Cuyo, the overseas terminal office for Buenos Aires.

For each of the three wave lengths used in the South American service, there is a separate antenna at Lawrenceville. These consist of networks of wires in the form of coarse mesh "curtains" suspended from seven 180-foot steel towers, the line of towers broadside to the direction of transmission. Due to the arrangement and interconnection of these wires, the signals emitted have a marked directional effect.

Impulses from the various vertical segments, the active elements, neutralize each other in the plane of the curtain and reinforce each other in the direction perpendicular to the plane of the curtain. The energy emitted is thus concentrated within a small arc. The efficiency of the antenna is further increased by a similar curtain suspended behind the active one, which serves to reflect radio energy sent out in that direction.

The transmitting set has an unmodulated power of 15 kilowatts and a peak power of 60 kilowatts. It is maintained at the desired frequency by means of a quartz crystal control circuit, the crystals for this circuit being located in heat-insulated ovens, the temperature of which is accurately and automatically regulated. In the final or output stage of the transmitter, there are six ten-kilowatt water-cooled vacuum tubes operating at a plate voltage of about 10,000 volts. To drive the voice currents through the 5,300 miles of space, the transmitter normally amplifies them some millions of times in power.

The receiving set at Netcong, N. J. is a specially-designed set using screen grid tubes and equipped for automatic amplification control. Signals from South America picked up by this station are amplified enormously, the amplification again being some millions of times in power. Connection of the receiver can be made to any one of three antenna "arrays." Each of these arrays consists of a series of brass pipes arranged in a crenellated, or "wall of Troy," formation in a vertical plane and mounted on a wooden framework.

These antennas also have marked directional characteristics, their receptivity being confined to a comparatively small arc. The arrays are built broadside to the direction of the South American station. By means of concentric copper pipes laid a few feet above the ground, antennas and receiving set are connected with a minimum of outside interference.

President Walter S. Gifford, of the American Telephone & Telegraph Co., opened the ceremonies by calling Col. William F. Repp, vice-president of the International Telephone & Telegraph Co. in Buenos Aires, and informing him that President Hoover had consented to open the new service made possible by the establishment of wire and radio communication between Washington and Buenos Aires.

The connection was established immediately and Mr. Gifford asked Col. Repp to put him through to Santiago, Chile, and President Hoover first exchanged greetings with the President of Chile, Carlos Ibanez del Campo. Then Acting Secretary Cotton conversed with the Chilean minister of the interior, David Hermosilla.

The telephone circuit was then switched to Montevideo, the capital of Uruguay, and President Hoover and the president of Uruguay, Juan Campisteguy, exchanged greetings. Mr. Cotton then talked with the minister of foreign affairs of Uruguay, Rufino T. Dominguez, and the circuit was again changed to Buenos Aires, when Mr. Cotton conversed briefly with John Campbell White.

There was no exchange of greetings between President Hover and the president of Argentina, Dr. Hipolito Yrigoyen, as was originally planned. President Yrigoyen, it was stated orally at the White House on April 3, cabled President Hoover that he would be unable to exchange greetings because of ill health.

The Columbia and National broadcasting systems carried the conversations over a nationwide and international network of radio stations, and also used a short-wave transmitter to dispatch the conversations to remote parts of the world.

Shortly after the ceremonies the operators began putting through the calls already filed by a score of subscribers at both ends of the cicuit. During the first 24 hours the new radio telephone link was open to service, a total of 51 calls was received. While most of the calls were from subscribers in New York City, some of them involved such distant points as Los Angeles and San Francisco and, in South America, Santiago.

New York's Telephone Service Interrupted by Gas Explosion.

A leaky gas main set afire by four manhole explosions on Broadway between Twenty-ninth and Thirtieth streets, New York City on April 3, at 11:30 a. m. cut the neighborhood off from telephonic communication and affected every telephone exchange in the city to some extent. Traffic lights east of Broadway were crippled for hours and the fire alarm system temporarily impaired.

Early estimates by the telephone company indicated that 14 cables carrying a total of approximately 12,800 subscribers' circuits were put out of commission. Of these, all but 2,300 were restored to service by 9 o'clock a. m. on April 4. The actual number of subscribers affected was something less than the number of circuits, inasmuch as certain of the circuits were not, at the time, assigned to subscribers. Later estimates gave the number of subscribers' lines as approximately 8,000.

The more serious damage insofar as it affected service generally throughout the city, was done to the trunk lines interconnecting various central offices in various parts of the metropolis. In all, about 10,500 of these circuits were put out of service.

Pending restoral of service over the damaged trunks, repair forces set up approximately 3,000 temporary trunk circuits, by using spare facilities in undamaged cables and by alternative routings around the damaged area. Of these temporary circuits, 630 were in working order by 9 o'clock a. m., April 4. In all, some 88 sections of damaged cable had to be replaced; 21 of these had been run into the conduits ready for splicing by 9 o'clock a. m. on April 4.

Of the inter-office trunk lines, all but 7,800 had been restored to service by the morning of April 5, mainly by alternative routings. Of the balance to be restored, about one-third are miscellaneous leased lines, etc., not affecting the service of the general public. It was expected that it would be possible to restore another 1,000 circuits on April 5, by alternative routings.

After 12 o'clock noon April 5 all calls to and from the affected central offices were accepted on a normal basis, although there was some slight delay.

Complete restoration of service throughout the city was made by Monday morning, April 7, although it will require about 10 days longer to replace, in permanent form, the present temporary circuit arrangements which were made to restore service as quickly as possible.

Illinois Association's First 1930 District Meeting Scheduled.

The first district meeting of the Illinois Telephone Association this year will be held at Jacksonville on Wednesday, April 23. There will be a traffic conference under the leadership Mrs. Mayme Workman, traffic supervisor of the association, and a men's conference led by President Louis Pitcher.

The Illinois Telephone Co. will be the host and excellent arrangements have been made for both meetings in the American Legion Home. A good program of an instructive character has been arranged, and there will be plenty of good food and entertainment at the noon-day luncheon, A. J. Parsons, secretary of the association, has announced.

The Telephone System: Important Phases

Part II of Section of Forthcoming New Volume, "Telephone Theory and Practice", Parts of Which Are Being Given Advance Publication in "Telephony"—Outline of Growth of Idea of Telephone Exchange—Telephone Switchboard

By Kempster B. Miller

The idea of the telephone exchange, whereby a number of lines are brought to a common point, and there provided with facilities for connecting and disconnecting them at will, opened the way to the complete removal of the limitations inherent in the isolated line.

As pointed out in an early edition of American Telephone Practice,[1] the first idea of an exchange that I have been able to find was that of Dumont in 1851.[2] Not having the telephone, Dumont based his idea on the use of telegraph instruments for sending and receiving messages.

As indicating the extent to which he had grasped the general idea of grouping lines and of connecting them for communication, one of the figures of his British patent is reproduced here as Fig. 25. The central point, marked *O* in the diagram, he called the "central station." This point and all of the sub-centers numbered from 1 to 16 were provided with apparatus for connecting the lines. The mode of operation may be understood from the following quotation from Dumont's specification:

Each house has an electric wire connecting it to the station, and a double electric apparatus, one at the subscriber's house and the other at the neighboring station to which it is connected. The houses are telegraphically numbered from one to any number. Thus, suppose the house number 3, connected to station No. 1, and the occupant of house No. 3 is desirous to communicate with the house 287, connected with station 12, the subscriber of the house No. 3 signalises to station 1, the number 287.

The clerk of the station No. 1 then directs the central station 0 to place the wire 1.0 in communication with the wire 0.12. When this is done the clerk signalises to station 12 the No. 287. The clerk at station 12 then connects wires 0.12 with the wire 12.287.

This accomplished, the clerk of station No. 1 finally connects the wires 3 and 1.0 and a direct and intermediate communication is then established between the houses 3 and 287, and both subscribers may correspond privately.

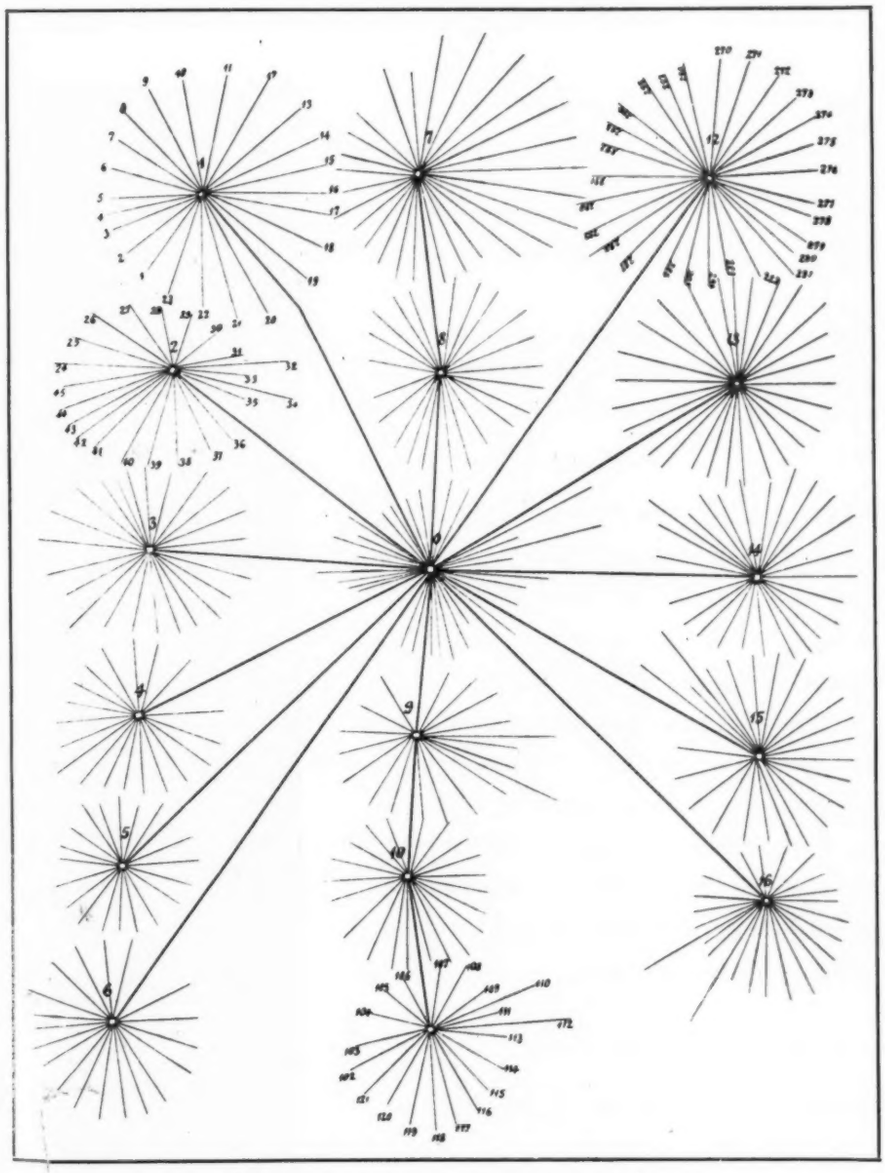


Fig. 25. Dumont's Telegraph Exchange, 1851.

We must accord to Dumont not only the basic idea of exchange operation, but also of multi-office operation, with what we now call "trunks" extending between the offices, enabling the subscribers of one office to talk with those of another. Evidently he did not anticipate much traffic, for instead of employing "direct trunks" between each pair of offices, as we now do in congested areas, he centered all trunks at one office and routed all calls through that office by connecting the trunks in tandem.

This use of "tandem trunks," as illustrated by the string of offices, 7, 8, 0, 9, 10, etc., extending down the center of Fig. 25, is what we do today in connecting widely separated and relatively unimportant offices, where the traffic does not warrant direct trunks between each pair of offices. Furthermore, Dumont is apparently the first to have designated the patron of such a service as the "subscriber."

So far as is known, nothing ever came of Dumont's idea. When the world was ready, even for a telegraph exchange, the invention apparently had to be made again. We think, however, that the name of Francois Marcelin Aristide Dumont, a French engineer, deserves a place in the telephonic Hall of Fame.

A so-called telegraph exchange was later established in London, evidently without the teaching of Dumont in mind, for this London exchange contained no equipment for interconnecting the lines. It merely permitted each subscriber to communicate with the central office.[3]

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[1] Fourth Edition, 1905, p. 174.

[2] British patent to Dumont, No. 13497 of 1851.

[3] "The Telephone and Telephone Exchanges," p. 80, J. E. Kingsbury, Longman's Green & Co., 1915.

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In 1874, just before the birth of the telephone, a telegraph exchange system was put into use in New York City. It was for connecting lawyers who chose to subscribe, and was, for this reason, called the "law system." The telegraph instruments, which were of the dial pattern, were subsequently replaced by telephone instruments, and thus originated, as far as I am able to find, the first telephone exchange system. It was from this particular system that the well-known Law telephone system, widely used in later years, took its name.

Apparently the telephone exchange had its practical beginnings in about 1878. These beginnings were made almost simultaneously in a number of cities in the United States. Few had any conception of its real significance. But let us see what the first telephone engineer thought about it! Bell had the vision to see with remarkable clarity some of the possibilities of the thing which his genius had created. In a letter, dated March 25, 1878, written to British capitalists, he said, in part:

The simple and inexpensive nature of the telephone, on the other hand, renders it possible to connect every man's house, office, or manufactory with a central station, so as to give him the benefit of direct telephonic communication with his neighbors, at a cost not greater than that incurred by gas or water.

At the present time we have a perfect network of gas-pipes and water-pipes throughout our large cities. We have main pipes laid under the streets communicating by side pipes with the various dwellings, enabling the members to draw their supplies of gas and water from a common source.

In a similar manner it is conceivable that cables of telephone wires could be laid underground, or suspended overhead, communicating by branch wires with private dwellings, country houses, shops, manufactories, etc., etc., uniting them through the main cable with a central office where the wire could be connected as desired, establishing direct communication between any two places in the city.

Such a plan as this, though impracticable at the present moment, will, I firmly believe, be the outcome of the introduction of the telephone to the public. Not only so, but I believe in the future wires will unite the head offices of the telephone company in different cities, and a man in one part of the country may communicate by word of mouth with another in a different place.

With the increasing realization of the possibilities of the telephone exchange, there began a period of intense development to provide the devices, and systems necessary for their regulation. But as the development progressed, so did the possibilities. Each accomplishment opened up new visions of things yet to be done. And this process is still going on. To illustrate this: in 1926 more than two new telephone patents issued in the United States for every one that expired.

The course of telephone exchange development may be illustrated most strikingly by considering the switching art; which relates to the appliances and methods employed at the central office by which lines are connected for conversation and afterwards disconnected.

Telephone Switching.

At the outset there were no switchboards except the very rudimentary ones that had been employed in telegraphy. These were at first used, but it soon became apparent that they could not cope with the more exacting and enormously extended requirements of telephone exchange work. The whole switching art had to be built up from practically nothing.

At first these switchboards were required to interconnect perhaps a dozen lines or less. Equipment had to be developed even for this now simple requirement. The old telegraph switchboard of the cross-bar type proved cumbersome and unreliable. In its place was developed a type wherein each line terminated at the central office in a connection socket, or "jack" and in a visual signal or "annunciator."

In order to connect the lines for conversation, flexible conducting cords were used terminating at each end in a metallic plug adapted to fit into the jacks. In order to assure firm contact between the plug and the jack, and also to accomplish certain switching operations, each jack was provided with a spring which was lifted by the inserted plug, hence the name "spring-jack."

The Manual Switchboard.

Thus the manual switchboard in telephony had its beginning. It is still used more extensively than any other type, and its development has been one of the outstanding achievements of the art.

It must be remembered that in this development, the switchboard had at all times to be coordinated with the telephones at the subscribers' stations and vice versa. It is therefore natural that the first switchboards were of the so-called magneto type, employing electromagnetic annunciators as line signals because they were well adapted to respond to the currents of the magneto generators of the subscribers' telephones. These early switchboards were adapted only for grounded lines because at that time no one realized that any other kind of lines would be required.

At first the number of lines was so few and the "traffic" so small that one operator could attend to them all. Later as the lines and traffic increased, the "load" had to be divided. This was done by assigning to each operator as many lines as she could conveniently handle. The jacks and annunciators thus assigned to each operator were located on different sections or "positions" of the switchboard.

As a result of this distribution, the telephone engineer was soon confronted with the problem of connecting two lines together whose jacks were not within reach of a single operator. This led to the so-called transfer switchboard, employing local trunk lines extending between the sections or positions occupied by the different operators. By means of these, an operator answering a call on one of the lines assigned to her position could "transfer" the connection to the operator at whose position the called line terminated, the connection between the two lines being established through the trunk.

This plan of employing intermediate trunks and two operators for completing a connection between two lines terminating in the same office was obviously uneconomical. A much better plan was soon devised. This resulted in the so-called multiple switchboard of which Leroy B. Firman of Chicago was the first proponent.

The idea back of the multiple switchboard is that of multiple terminals for each line. The line signals and the corresponding incoming terminals ("answering jacks"), of which there is one of each for each line, are distributed in groups among the operators' positions in accordance with the ability of the operators to attend to them, exactly as in the transfer system. In addition, each line is provided with a number of outgoing terminals ("multiple jacks"), and these are so placed along the face of the board that one of them will lie within the field directly reached by each operator.

By this means each operator, no matter what position she occupies, has within her reach a terminal or jack for every line. Therefore, she may without the assistance of any other operator, answer any call on the group of lines whose answering jacks are located on her position, and complete the connection with any other line in the entire office. The number of lines for which this multiple arrangement is possible is evidently limited by the number of terminals that can be placed within the field of reach of an operator. In modern practice the economical limit has been found to be 10,000.

With the growth of the number of subscribers' stations and lines, the question of conservation of space on the face of the switchboard became increasingly serious. Also, the necessity of providing and maintaining a separate battery and magneto generator at each subscriber's station proved to be more and more irksome.

Relief in these and in other respects was afforded by the advent, in the early 90's, of the "common battery" switchboard. This was a revolutionary change, and has been universally adopted in nearly all exchanges except those serving small communities.

The common battery system has also been called the "central energy" system. The former name is better, for it indicates not only that the sources of energy are centralized but that they are also unified. A single battery of sufficient voltage and capacity is used to supply talking current to all of the subscribers' transmitters.

Having this current supply for transmitter operation, it is equally available for operating the central office signals. Hence, as a result of this one change, the necessity for the magneto generator and the local battery at the subscriber's station disappeared.

The economy of this step was obviously very great. Instead of having thousands of local batteries and magneto generators located under thousands of different roofs, there was one large battery located under one room. Economies resulted in other directions: among them that of space on the face of the switchboard.

The steady-voltage common-battery lent itself admirably to the use of incandescent lamps for central office signals, whereas the magneto generators did not. As a result, miniature incandescent lamps replaced the old magnetic drops on the switchboard. They occupied but a fraction of the space, gave better signals, were automatically self-effacing, and were more reliable in operation.

With the development of the common-battery multiple switchboard, manual switching reached the basis on which it rests today. The practical ultimate capacity of a single multiple switchboard unit has been found to be in the neighborhood of 10,000 lines. This, therefore, is the limiting capacity of a single office.

When more lines than that are to be served, other offices are added, and the old transfer idea again resorted to. In some of the more congested metropolitan areas the density of telephone development is so great as to require several 10,000 line switchboard units in a single building serving a relatively small area.

The Automatic Switchboard

It is surprising that almost as soon as the idea of central office switching was put into practice, a few ambitious inventors conceived of doing this switching automatically. They proposed to dispense with the operator and instead, employ means whereby the subscriber could, by remote control, perform his own switching operations at the central office.

The efforts toward such a difficult accomplishment while the art was yet so young were thought to be misdirected. So-called practical men had nothing but intolerance, and ridicule was heaped on those who persisted in such efforts. For many years little headway was made. This is not surprising because the technique of the telephone art, even in its simpler phases, had not yet been sufficiently developed to form a foundation for the practical accomplishment of this very difficult feat.

These earlier workers in the automatic field were followed by such men as Alexander E. Keith of Chicago, Ill., George William Lorimer of Brantford, Ontario, Can., and a host of others who had not only the vision but the practical ability to make their dreams come true.

A few automatic exchanges that may be considered practical were established in the United States and Canada during the early years of the present century. Among the more notable ones may be mentioned those at Fall River, Mass., in 1903, Grand Rapids, Mich., in 1904, Columbus, Ohio, in 1905, and Peterboro, Ontario, in 1905. The number of such exchanges grew, and gradually the idea began to dawn on those in control of the larger affairs of the telephone business that the automatic exchange was a really practical affair.

It was not until the World War, however, that the real, economic possibilities of machine-switching came to be generally appreciated. As a result of the conditions during and following the war, the market value of female labor was greatly enhanced. Young women who previously had been satisfied with relatively low wages for telephone operating found more remunerative if not more attractive work in other fields. A readjustment of operator wages had of necessity to follow. This was one factor which greatly altered the relative economies of the manual and the automatic methods of operating.

Another factor was that in large metropolitan areas the ability of the manual system to cope with the constantly-increasing traffic loads was being more and more taxed.

More will be said later of the relative economies of the two systems, but at this point it may be stated that there is general belief among telephone engineers and those companies and governments which are responsible for telephone operation in a large way, that machine switching will gradually replace the manual in all large cities. How far down in the scale of size of communities this change will go is still a matter of wide differences of opinion and, consequently, of much discussion.

There is also much discussion as to how the machine-switching equipment at the central office should be controlled, or, more strictly speaking, by whom it should be controlled. The plan now generally adopted is to have the subscribers do it. Another plan, whose advocates are now decidedly in the minority, is to have a comparatively few operators do it. It is simply a question of whether substantially the same switching-machines at the central office shall be directed by the dials on the subscribers' telephones or by "adding machine keyboards" manipulated by operators, who receive their instructions from the subscribers. There is much to be said for each plan.

For some reason, not altogether logical, the subscriber-controlled systems are referred to by such names as "full automatic" or "full mechanical"; and the operator-controlled systems are variously designated as "semi-automatic," "semi-mechanical" and "automanual." In any event they are all properly "machine switching sytems." *(To be concluded)*

C. Y. McVey, of Ohio, Now President of United Telephone Co.

At the annual meeting of the board of directors of United Telephone Co. held March 26 Charles Y. McVey of Cleveland, Ohio, formerly president of the Ohio State Telephone Co., was elected president. The general offices of the company have been

C. Y. McVey, Formerly President of the Ohio State Telephone Co. and a Past President of National Independent Telephone Association, Is Now President of United Telephone Co. With General Offices in Cleveland, Ohio.

removed from Chicago to Cleveland and are now located in the B. F. Keith building at 17th street and Euclid avenue in that city.

The election of Mr. McVey as president was brought about by the growth of the company to a size requiring the full-time services of the company's chief officials, which could not be had under the management of J. G. Wray & Co., because of their many other engineering engagements. Both Mr. Wray and Cyrus Hill of J. G. Wray & Co., who have served as president and vice-president, respectively, retain their full interests in the company and continue as members of the board of directors.

Other officers elected at the meeting are William L. Ross, vice-president; W. M. Boyd, vice-president and treasurer; James Dale Thom, secretary, and Fletcher Lewis, assistant-secretary.

Prices in the Metal Markets.

New York, April 7.—Steel—Prices per 100 pounds, f.o.b. Pittsburgh; Blue annealed sheets, $220@230; galvanized sheets, $330@340; black sheets, $265@275; steel bars, $180@190. Copper—Quiet; electrolytic spot and futures, 18c. Iron—Quiet; No. 2 f.o.b. eastern Pennsylvania, $18.50@20; Buffalo, $16.50@17; Alabama, $13@15. Tin—Easy; spot and nearby, $36.12; futures, $36.37. Lead—Easy; spot New York, 5.50c; East St. Louis, 5.40c. Zinc—Steady; spot and futures, 4.95@5.00c.

Convention of Texas Independents

Annual Convention of Texas Independent Telephone Association at Fort Worth March 18, 19 and 20, Marks 25th Anniversary of That Organization—Meeting Marked by Good Attendance and Interesting Addresses—Officers Elected

The Silver Anniversary convention of the Texas Independent Telephone Association, held at the Texas Hotel in Fort Worth, Texas, March 18, 19 and 20, was attended by 352 Independent telephone people, guests and friends. This number represented a very substantial increase over the attendance a year ago.

On January 5, 1905, the Texas association was organized in Dallas. For 25 years the organization has worked for the interests of the Independents. Among those present at the meeting in 1905, who are still engaged in the Independent telephone business in Texas, are C. A. Shock, Sherman, vice-president, Northern Texas Telephone Co., and Ward Tampleman, Navasota, president, Navasota Telephone Co.

At the business session held Thursday afternoon the following directors were chosen for the ensuing year:

C. J. Bain, San Antonio, president, Texas Associated Telephone Co.; T. P. Bearden, Baird, general manager, Home Telephone & Electric Co.; Lon J. Darley, Dallas, vice-president and general manager, Three States Telephone Co.; R. B. Fairly, Lubbock, general manager, State Telephone Co. of Texas; L. S. Gardner, Waco, vice-president and superintendent, Texas Home Telephone Co.

D. J. Johnson, Santa Anna, president, Santa Anna Telephone Co.; John W. Pace, Haskell, general manager, Haskell Telephone Co.; A. L. Robb, Electra, proprietor, Electra Telephone Co.; John Y. Rust, San Angelo, president, San Angelo Telephone Co.; E. P. Seaman, Georgetown, district manager, Southwest Telephone Co.; D. F. Shilling, Tuscola, proprietor, Shilling Telephone Exchange.

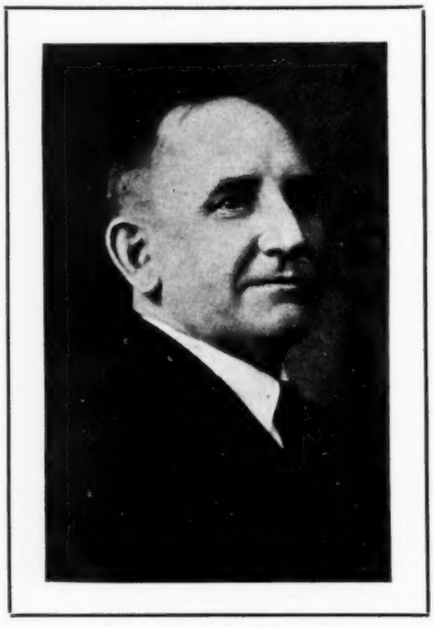
C. A. Shock, Sherman, vice-president and general manager, Northern Texas Telephone Co.; Jean Shotwell, Lufkin, general manager, Lufkin Telephone Co.; Sam H. Shutt, Waco, general superintendent, Texas Long Distance Telephone Co.; T. A. Singer, Dimmitt, proprietor, West Texas Telephone Co.; R. B. Still, Tyler, general manager, Gulf States Telephone Co., and Merton Swift, San Marcos, general manager, San Marcos Telephone Co.

The newly-elected directors, at a meeting held immediately following the business session, elected these officers for the coming year:

President, R. B. Still, Tyler; vice-presidents, John W. Pace, Haskell; John Y. Rust, San Angelo, and C. A. Shock, Sherman; secretary, L. S. Gardner, Waco, and treasurer, D. J. Johnson, Santa Anna.

The first general session of the convention was called to order in the ball room of the Texas Hotel at 2 o'clock by President R. B. Still of Tyler, who presided.

In delivering his annual address at the first general session of the convention on Tuesday afternoon, March 18, President



R. B. Still, Reelected President of the Texas Independent Telephone Association, Is Also General Manager of the Gulf States Telephone Co. at Tyler.

Still gave a very complete review of the legislative work done during the past six sessions of the Texas legislature.

"Texas Independent telephone men are opposed to any legislation affecting our interests that are purely political and intended only for the purpose of building up the political fortunes of a few city and state officials," declared Mr. Still. "That is all we could see in the legislation advanced during the six sessions of the Texas legislature that have taken place during the past 15 months.

"We have never opposed the principle of regulation, provided it is state-wide. We are opposed to divided control, to the cumbersome methods proposed for regulating our business, and the added cost which ultimately will have to be borne by our patrons. We can not see the practicability of the sort of control proposed so far."

In referring to the causes that brought about the control of railroads in the United States, President Still quoted Mark Sullivan in The Dallas News, to the effect that "what brought on regulation of railroads was secret rebates on freight rates to competing citizens and corporations, which condition was abundantly proved. Public utilities, however, have not been charged with giving secret rebates or of unfair discrimination in rates."

He pointed out that 40 per cent of the telephones in Texas are served by Independent operators, whose properties are valued at $25,000,000. He also referred to the strong tendency to consolidate smaller companies into larger groups. In other words, the "chain" system seems to be gaining a foothold in the Independent telephone field. In evidence he gave figures to the effect that four years ago there were approximately 600 Independent telephone companies in Texas, whereas there are only about 350 at the present time.

He urged continued cooperation between the Independent companies and the Bell company, and expressed the hope that those companies that have come under the control of groups of bankers and brokers may work in entire harmony with the spirit of the older organizations in order that the present high standards of service and resultant good will may be perpetuated and increased.

Another speaker during the opening session was W. C. Edwards, Dallas, director, Texas Public Service Information Bureau. He addressed the meeting on the "Spirit of Service."

"The spirit of service is typified by the Golden Rule. If everybody did unto others only that which he would have others do unto him, there would be no question of public relations or need to discuss the 'spirit of service,' and this would be a different, a better world in which to live," said Mr. Edwards.

"So if we are to render real service and use its coinage for the acquisition of those desirable things enumerated, we must pay much attention not only to the big things but the little as well. In public relations it may be accepted as a fact that it is the things of seemingly small consequence which often bring the greatest embarrassment and ill-will. The little slight, the quite unintentional discourtesy or lack of consideration, may cut more deeply and remain a sore spot longer than a real grievance," he declared.

"In dealing with the public, remember that a little favor done graciously is more appreciated than a bigger favor done grudgingly. Don't refuse a request you cannot comply with by saying merely, 'It is against the rules.' Elucidate, explain why it is against the rules. A man can say 'no' in a gracious way that does not offend; with a different inflection, the same man

can say the same 'no,' but so curtly that it does offend."

Charles C. Deering, Des Moines, secretary-treasurer, United States Independent Telephone Association, in addressing the meeting on the subject "What We Are Here For," informed Texas Independent telephone men that they should oppose the Couzens communications bill now before Congress because a very small percentage of the Independent telephone business is interstate.

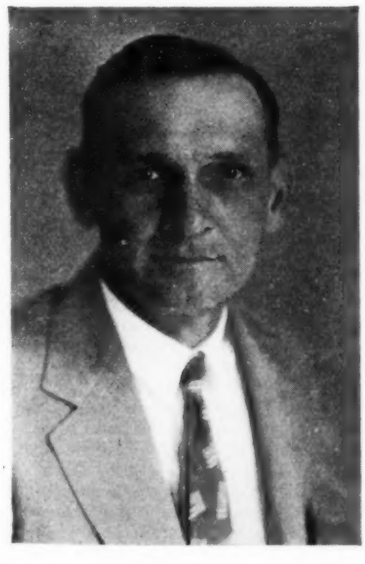
The Couzens bill, he explained, provides for the regulation of the telephone industry by a specially-created commission and turns over to it the powers of the present radio commission over wireless, and the powers of the Interstate Commerce Commission over wires. A commission created by this bill would try to dominate, just as the Interstate Commerce Commission dominates the railroads.

The report of Secretary L. S. Gardner, Waco, showed that during the past year several special legislative bulletins had been issued, due to the unusual number of call sessions of the legislature; that five district meetings had been held which showed an increase in attendance over the five meetings of the previous year of 158.

The report of Treasurer D. J. Johnson, Santa Ana, showed the association to be in a healthy financial condition.

Both reports were accepted and ordered filed.

On Wednesday morning the general session was called to order by Vice-President



John W. Pace, General Manager of the Haskell Telephone Co. at Haskell, Was Again Elected as Vice-President of the Texas Association.

John W. Pace, of Haskell, who presided.

E. R. Stonaker, Rochester, N. Y., consulting engineer, Stromberg-Carlson Telephone Mfg. Co., spoke on "Furnishing Modern Telephone Service to a Small Community at a Profit." He explained various economies which might be effected in small exchanges by the installation of modern up-to-date telephone equipment, advocating common battery service.

"The Importance of Your Traffic Department" was the subject of a very interesting talk by H. B. Whatley, Dallas, toll traffic supervisor of the Southwestern Bell Telephone Co. Mr. Whatley showed by various illustrations that the traffic department in a small exchange is just as important as any other department. Special attention, he urged, should be given to this part of the work in a small office because the public comes in contact with the employes of the traffic department as often if not more so than with those of any other department.

The Southwestern Bell Telephone Co. exhibited a moving talking picture which was very interesting to those present. It explained how a talking moving picture is made and reproduced on the screen.

E. R. Meyers, Galveston, chief chemist, International Cresoting & Construction Co., gave an illustrated talk on "Preservative Treatment and Service Characteristics of Creosoted Pine Poles." The motion picture used in connection with the talk showed how creosoted pine poles are prepared for market from the time they are in the forest until they are set in the ground ready for use.

Wednesday afternoon the first session of the traffic conference met, being called to order at 2 o'clock.

"Telephone Operating as a Profession" was the subject of a very instructive address by J. C. Paxton, McAllen, general manager, Rio Grande Valley Telephone Co. In his very entertaining manner, Mr. Paxton explained why telephone operating is and should be regarded as a profession. He offered many suggestions by which operators might improve their efficiency and thereby help maintain the standard which has been reached in their profession.

John E. Robbins, Jr., San Angelo, traffic superintendent of the San Angelo Telephone Co., was the next speaker on the program. His subject, "Small Office Operating," covered in detail the various and sundry duties of a chief operator and cashier in a small exchange. He outlined methods by which such work could be carried on with the least effort and the greatest efficiency.

"Improvement in Completion of Local Calls," by William Swan, Dallas, connecting company service supervisor of the Southwestern Bell Telephone Co., furnished much valuable information for operators in the small exchanges whereby they might speed up the local service.

H. T. Haley, Sherman, plant superintendent, Northern Texas Telephone Co., addressed the meeting on "Proper Care of Switchboard Equipment." Mr. Haley's talk was directed principally to the operators. He sought to teach them how they could better take care of the company's equipment which they use in their daily work.

The first session of the traffic conference was especially arranged for the operators and managers from the small ex-

L. S. Gardner of Waco, Who Has Ably Served the Texas Association as Secretary for a Number of Years, Was Again Elected to That Position.

changes, and the subjects of the various addresses covered those matters which are of much importance to them. The attendance at this session was very gratifying and indicated that the program committee struck the keynote when it prepared the program especially for those from the small towns.

The committee in charge of the entertainment for the annual convention departed from the usual procedure and changed the annual mid-day luncheon to a banquet in the evening, followed by a dance.

On Wednesday evening 339 telephone people gathered for the annual banquet and entertainment. The music was furnished by the Hyman Maurice orchestra of the Texas Hotel. The toastmaster for the occasion was Sam H. Shutt, Waco, general superintendent, Texas Long Distance Telephone Co. Robt. E. Sweeney, Ft. Worth, was the song leader and was in charge of the special banquet entertainment.

Col. J. E. Farnsworth, Dallas, vice-president, Southwestern Bell Telephone Co., who has been in the telephone business in Texas for the last 45 years, entering the service of the old Southwestern Telegraph & Telephone Co. at Dallas in 1885, was speaker of the evening. Mr. Farnsworth, after stating that his remarks at the banquet were as one telephone man to another and not in any way to be considered as coming from an official of the Southwestern Bell company, declared that he was well qualified to "reminisce." Of the small group of company officials that

operated the company in 1885, he said, only one other is alive today, and he retired from active telephone service about 15 years ago.

In 1885, Mr. Farnsworth recalled, the entire general office of the company was housed in two small rooms in Dallas. At that time, there were only about 6,000 telephones in Texas and Arkansas, as compared to the more than 2,000,000 telephones in use in the two states today. The largest exchanges in the two states then were located in Galveston, Houston, San Antonio, Dallas, Ft. Worth and Little Rock, Ark., each exchange having about 500 subscribers.

The only long distance line in the two states then ran from Dennison through Dallas to San Antonio via Austin, with a branch line to Ft. Worth. And while this line extended over this distance, the company only promised satisfactory service for distances of less than 50 miles, he said, contrasting this with the present network of long distance lines that connects every hamlet in Texas with all other parts of the North American continent and with some foreign countries.

The banquet was followed by the annual dance of the organization which was attended by approximately 300 telephone people, their guests and friends.

Thursday morning the last session of the traffic conference was held. Lon J. Darley, Dallas, vice-president and general manager, Three States Telephone Co., called the meeting to order and presided.

C. A. Shock of Sherman, Vice-President of the Northern Texas Telephone Co., Was Elected to Position of Vice-President of the Texas Association.

The first speaker was Miss Anne Barnes, Des Moines, Iowa, special traffic representative of United States Independent Telephone Association. The subject of Miss Barnes' address was "Progress."

"Many years ago it was said of the telephone industry that its executives assumed a 'public-be-damned' attitude towards their customers," stated Miss Barnes. "Now the telephone executives have learned to put into effect a meeting-the-public-demand attitude in their business. We are living in a 'new' age, when the public requires each year a newer and more improved model than that of last year, whether it be washing machines, radios, automobiles or telephones."

R. E. Glaze, Ft. Worth, district traffic chief, Southwestern Bell Telephone Co., in speaking on "Improvement in Evening Toll Service," told of steps to improve this service through closer supervision and improvement of the personnel.

"Increasing Toll Revenue" was the subject of a talk by Sam H. Shutt, Waco, general superintendent Texas Long Distance Telephone Co. Mr. Shutt explained numerous ways in which the toll business might be increased, outlining many methods which might be used by the local operating force.

H. B. Whatley, Dallas, toll service supervisor of the Southwestern Bell Telephone Co., gave a short talk on "Improving Per Cent Completed in Toll Calls."

The morning session closed with a brief talk to the operators by R. B. Still, president of the association.

On Thursday afternoon the last general session of the convention was held together with the business session. At the general session one subject was presented for discussion, "Importance of Rural Subscribers to an Exchange." The discussion was divided into three sections.

The first discussion was led by E. P. Seaman, Georgetown, district manager of the Southwest Telephone Co., the subject of which was "Best Methods of Serving Rural Subscribers."

Oscar Burton, Tyler, assistant to general manager, Gulf States Telephone Co., discussed second division "Should City Subscriber Rates be Expected to Help Carry the Cost of Rural Service?"

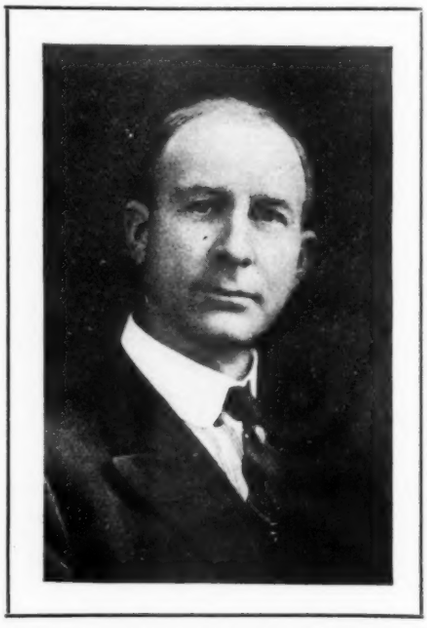
The last division "Should Rural Rates Be Such as to Carry the Cost of Rendering the Service and Pay a Reasonable Return on the Investment" was discussed by Minor Corman, Dallas, district manager, Kellogg Switchboard & Supply Co.

The special resolutions committee consisting of C. A. Shock, Sherman, chairman; Oscar Burton, Tyler, and J. C. Paxton, McAllen, appointed to prepare resolutions on the deaths of J. B. Earle, Waco; W. L. Webb, Sherman, and R. E. Ragsdale, Collinsville, was called upon for a report and presented the following resolution:

Whereas, it has pleased our Heavenly Father to remove from our midst, certain of our beloved associates during the past year and

Whereas, it is the desire of the association to pay tribute to their long and faithful service in the field of Independent telephony, this period of our program has been set apart in honor of the memory of the following members:

W. L. Webb, for 20 years an employe of the Northern Texas Telephone Co. at Sherman, first as collector and for the last 15 years as local commercial manager, died



John Y. Rust, President of the San Angelo Telephone Co., San Angelo, Will Again Serve the Association as Vice-President.

on March 28, 1929, after an illness that extended over a period of one year and that made it necessary to give up his duties in the preceding January. No more loyal or faithful employe ever entered the telephone industry, and his going was a great loss to his associates.

On Armistice Day, November 11, 1929, the Grim Reaper once more entered the ranks of the Northern Texas Telephone Co. and removed R. E. Ragsdale, who for 23 years had been local manager of the company at Collinsville. Big-hearted, loyal and faithful, Bob, as he was known, had won a place in the hearts of his community and in the company he represented that can never be filled. He had not been previously ill and died from a heart attack.

For the third time during the year the Angel of Death sought out one of our number in the person of J. B. Earle of Waco, who died on February 8 of this year. Known as the "father" of Independent telephony in Texas, for more than 30 years Mr. Earle had battled in the front ranks of the cause he espoused; and no doubt to him, more than any other one person in the state, is due the success to which this great industry has attained. He was one of the founders of the Texas Independent Telephone Association and served it as president and in other official capacities at different times.

At the time of his death, Mr. Earle was vice-president and a member of the board of directors of the United States Independent Telephone Association, which offices he had held for many years. In addition to his telephone interests around Waco and in other Texas cities, Mr. Earle was president of one of Waco's largest banks and was engaged in agricultural pursuits very extensively.

His death after a brief illness was a great shock to his many friends in the telephone business over the entire United States; and his going was a distinct loss

to his organization, to the community in which he lived and to the state at large.

Be It Therefore Resolved, that we, the members of the Texas Independent Telephone Association, in convention assembled, hereby express our sorrow at the loss of these our honored members and express the hope that their splendid lives may ever prove examples for our guidance and that the battles they fought and the victories won may be an inspiration to us.

Be It Further Resolved that a copy of these resolutions be spread on the official minutes of this meeting and that copies also be furnished the families of our departed friends and coworkers.

The business session of the convention was called to order by President Still. The reports of the standing, special and convention committees were presented.

The registration committee reported that there had been 359 people registered at the convention. The resolutions committee presented resolutions extending a vote of thanks to all who took part in the program, to the manufacturers and dealers for the splendid exhibits; to the Texas Hotel, Fort Worth Chamber of Commerce and the newspapers in Fort Worth for services rendered and courtesies shown. A resolution was also presented thanking the officers of the association for the work they had done during the past year. All resolutions were unanimously adopted.

Invitations were extended by the Houston Chamber of Commerce and the Tyler Chamber of Commerce for the association to hold its 1931 convention in those cities. D. W. Carlton, convention manager of the Fort Worth Chamber of Commerce, was introduced and made a brief talk inviting the organization to hold its next convention in Fort Worth and he pledged the same service and courtesies heretofore accorded.

After a brief discussion, a motion was made that the next annual convention be held at the Texas Hotel in Fort Worth, March 24, 25, 26, 1931. The motion was unanimously carried.

A motion was made and unanimously carried electing these former Independent telephone people of Texas to honorary membership: F. W. Greber, Cleveland, Ohio; J. W. Roberts, Goldthwaite, Texas; C. D. Longserre, Frankston, Texas; Mrs. J. M. Daniel, Georgetown, Texas; and E. W. Hilburn, Smithfield, Texas.

Following the election of directors, the business session adjourned.

A meeting of the newly-elected directors was held immediately following the close of the business session at which the officers for the ensuing year were elected.

Excellent Program Provided for Ohio Association Convention.

The officers and committees of the Ohio Independent Telephone Association announce that all is in readiness for the annual convention to be held at the Deshler-Wallick Hotel in Columbus on April 15, 16 and 17, and results show that the greatest care has been exercised to provide a program that will meet requirements for detailed and authoritative information upon matters of vital importance to the telephone industry at the present time.

Among the subjects to come before the meeting will be the future of utilities taxation, of importance to telephone executives in Ohio because of the adoption of a new tax amendment to the state constitution; the establishment of good public relations; the news of the national field; the ultimate plan for toll development and a discussion of Ohio's utilities laws, and many other topics of interest, including operator's problems.

Convention attendants are urged to inspect the exhibit of telephone products, equipments, supplies and materials arranged by the manufacturers, jobbers and service companies. These displays represent the latest development in the various lines and will undoubtedly prove helpful in arranging a purchasing program for the coming spring and summer.

The program in full follows:

TUESDAY, APRIL 15, 2:00 P. M.

Address of Welcome, by James J. Thomas, Mayor, Columbus.

Response, by Dr. C. L. Jones, Athens.

Annual report of the president, by J. Warren Safford, Troy.

Annual report of the secretary-treasurer, by Frank L. McKinney, Columbus.

Appointment of committees: Resolutions, Auditing, Election Tellers, Miscellaneous.

"Affairs in the National Independent Telephone Field," by F. B. MacKinnon, president, United States Independent Telephone Association, Chicago, Ill.

Nominations for six directors.

General Session.

WEDNESDAY, APRIL 16, 10:00 A. M.

"Your Rates and Costs for Employes' Liability Insurance," by C. I. Evans, chief actuary, Ohio Industrial Commission, Columbus.

"Plans for Future Toll Development," by Randolph Eide, vice-president, Ohio Bell Telephone Co., Cleveland.

"The Taxation Program for 1931," by S. E. Forney, former member state tax commission, Columbus.

"Report on the I. C. C. Accounting Situation," by C. B. Russell, telephone accountant, Columbus.

"Report Covering Progress of the Ohio Study Into Toll Costs," by Gustav Hirsch, consulting engineer, Columbus.

Reports of auditing and resolutions committees.

Round-table discussion of matters of association interest. Timely topics and brief talks.

Election of six directors.

WEDNESDAY, 6:00 P. M.

Banquet and dance.

THURSDAY, APRIL 17, 10:00 A. M.

"The Value of Good Public Relations to Utilities," by C. A. Radford, public relations officer, C. C. C. & St. L. Railway, Cincinnati.

"The Carpenter Act in Practice," by Grover C. Maxwell, Columbus.

"Judicious Spending to Increase Net Earnings," by J. E. Albert, president, Standard Public Service Co., Cleveland.

"How Rural Communities Are Benefiting from Improved Service," by Arthur O. Black, Peoples Telephone Co., Butler, Pa.

"Preservative Treatment and Service Characteristics of Creosoted Pine Poles," by R. E. Meyers, chief chemist, International Creosoting & Construction Co., Galveston, Texas.

Traffic Conference.

WEDNESDAY, APRIL 16, 10:00 A. M.

Reception committee:

Mrs. Trevelle Jones, Lima.

Mrs. Grace Peltier, Bellevue.

Mrs. Sadie Dershmer, Warren.

Miss Minnie Mackin, Norwalk.

Opening of conference, in charge of A. C. Stuart, traffic and equipment engineer of the Utilities Service System, Lima.

"Is Our Work Organized?" by Mrs. Sadie Dershmer, chief operator, Warren Telephone Co., Warren.

"System in Service," by Mrs. Marguerite Ammerman, chief operator, Northern Ohio Telephone Co., Medina.

"What's in a Plug?" by Miss Florence Kiel, supervisor, Shelby Telephone Co.

"A Chief Operator's Duties in Connection with Public Relations," by Mrs. Mary Cunningham, chief operator, Athens Home Telephone Co., Athens.

"Peak Loads," by Miss Georgie Garver, chief operator, Ohio Central Telephone Co., Wooster.

"The Toll Center and Its Tributaries," by Mrs. Nell Feldhake, toll chief operator, Lima Telephone Co., Lima.

"Peg Counts, Their Use and How They Should Be Made," by E. W. Lormor, toll traffic supervisor, Ohio Bell Telephone Co., Columbus.

Relocation of Arrester Ground Removes Interruption to Service.

Previous to the summer of 1928, the Bennington division of the Twin State Gas & Electric Co. invariably lost its local exchange telephone service during every thunderstorm or disturbance on its high-tension lines, causing flashovers at its lightning arresters or the opening of high-tension circuit breakers, according to Leon C. White, manager of the Bennington division, in the Electrical World.

Through the cooperation of the local telephone superintendent, it was arranged to have the ground on the telephone protectors removed from the power substation and carried out to a distance of about 600 feet from the plant. This change has resulted in the Bennington division having telephone service through every serious storm and aided the telephone company in preventing surges into its cable boxes.

Here and There in Telephone Work

The Magneto Exchange Repairman: Phantom Circuit Continued

By JOHN A. BRACKEN.

A phantom circuit has the advantage of four line wires for one circuit, thus decreasing the transmission and lowering the electrical resistance. Fig. 1 shows the working arrangement of a phantom circuit between two magneto exchanges; also the two physical or side circuits upon which the phantom is built: In order that the phantom circuit connections at each end may be readily seen at a glance, heavy lines are drawn between its connection to the several phantom coils and the switchboard jack.

The type of phantom coil in most general use is known as toroidal. It consists of four windings of insulated copper wire on the same ring-shaped core, made up of either annealed iron wire or other suitable magnetic substance. Each winding is so designed that the induction between two of them is mutual; that is, induction produced on each other by two neighboring circuits, through the mutual inter-connection of their magnetic fluxes.

The coils used on a metallic phantom circuit are four in number, one being placed in each end of the physical circuits. The characteristics of the phantom coil are such that ringing-through and speech transmission are carried on without any difficulty owing to the coils being electrically balanced with regard to resistance and inductance.

The primary windings of the phantom coils are connected in series at the terminal punchings, 2 and 7, by a short strap of copper wire, and the secondary windings are connected in series in the same manner at the terminal punchings, 4 and 5, these connections being clearly shown in the diagram.

It will be noticed that the turns of wire around the ring-shaped core, in both primary and secondary, are in one direction. Now, if a variable alternating current flows in the primary winding of the phantom coil located in, say, line No. 1 at central office *A*, a magnetic field will be produced in and around the core, as shown by the arrows on the ring.

This magnetic field will set up induced alternating currents in the secondary winding which will flow through the wires of the outside line No. 1 and through the secondary winding of the phantom coil located in central office *B*, where they in turn induce like currents in the primary winding of the same coil. The foregoing developments occur when a conversation takes place over a side or physical circuit.

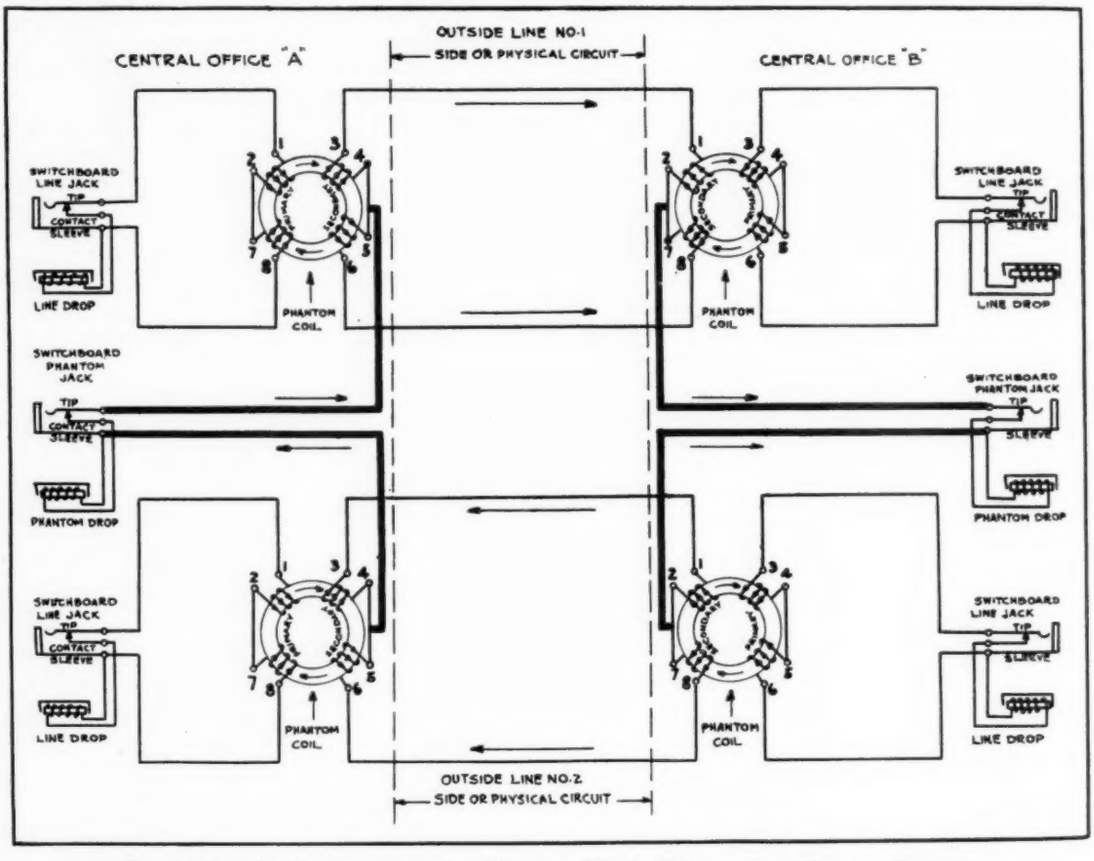


Fig. 1. Working Arrangement of a Phantom Circuit Between Two Magneto Exchanges.

It will be noticed that a wire, represented by a heavy line on the diagram, is connected at the strap, 4 and 5, connecting the center of the secondary winding on each coil. The connection at these points is the same at each central office: one wire from the secondary winding of the coil in the outside line circuit No. 1 connects to the tip spring of the phantom jack in the magneto switchboard, and the wire from the secondary wire of the coil located in line No. 2 is connected to the sleeve spring of the same jack. A drop is also shown connected to the phantom jack for the purpose of receiving the incoming signals on the phantom circuit.

The phantom circuit operation is as follows: Starting at the tip spring of the phantom jack in central office *A*, voice or variable alternating currents will flow toward the outside line No. 1, entering the phantom coil at the center of the secondary winding. From this point they divide and flow toward the two line wires through each half of the secondary winding, thence through the two line wires to the secondary winding of the phantom coil located at central office *B*.

Here the voice currents enter the coil and flow to the center strap, 4 and 5, where they reunite and flow over the phantom wire to the tip spring of the switchboard phantom jack in office *B*.

From the tip spring, the circuit is completed through the switchboard cord, subscriber's line and telephone set, in the regular way, returning to the sleeve of the phantom jack and thence through the other phantom wire to the center of the secondary winding of the phantom coil placed in the outside line circuit No. 2. From this point the phantom circuit is completed through the outside line circuit No. 2, to the sleeve of the switchboard phantom jack in central office *A* in the same manner as through line No. 1, as described.

The arrows on the turns of wire surrounding the magnetic ring cores show the

direction of current flow when a side or physical circuit is in use, and all the other arrows show the direction of current flow in the phantom circuit. In this case the current in the primary winding is neutralized (rendered inactive) and no conversations are heard between the phantom and the physical circuits.

Phantom circuits extended into central offices through underground or aerial cables will usually produce crosstalk, unless the cable conductors forming the physical circuits are arranged in squad formation for phantom purposes.

In ordinary telephone cables the two conductors forming a pair are symmetrically twisted together, which is equivalent to a series of regular transpositions. Although two physical circuits extended through an ordinary cable, and on which a phantom circuit is built would be transposed with respect to each other within the cable, neither of the two circuits would be properly transposed against the phantom.

In the special quadded type of telephone cable, each pair of conductors is twisted together; and in addition, each two pairs are twisted, thus producing a condition of proper electrical balance between the two pairs of conductors.

Transmission losses on the circuits of which phantoms are built, due to the placing of phantom coils in the physical or line circuits, cannot be completely eliminated; but by using very high grade ring-through and talk-through phantom coils, the loss will not be excessive and can be kept at a minimum if the condition of the line circuits is normal.

The requirements of a properly working phantom circuit are as follows:

1. It should be free from interference. Interference is an electrical disturbance introduced into a communication system by an extraneous source. Examples of interference are: lightning, power systems into the telephone system, inductive interference due to the effect of one telephone circuit on another, etc.

2. Conversations or ringing current transmitted over either of the physical circuits should not be heard on the phantom circuit.

3. Conversation and ringing current transmitted over the phantom circuit should not be heard in either of the side or physical circuits. Conversation (called crosstalk) and ringing current (called cross-ring) heard between either physical or phantom circuits are usually due to an unbalanced condition of the circuits.

The cause of crosstalking or cross-ringing may be a poor or rusty connection in one or more of the four line wires, a guy wire or a tree ground, a protector ground at one of the central offices, or perhaps a defect or other improper condition in one of the phantom coils, such as a loose connection or electrically-unbalanced condition. The coils should be tested for a cross between the separate windings, and for opens, grounds and short circuits.

In order to obtain an electrical balance between the circuits for the prevention of crosstalk and cross-ring, it is very necessary to have the four wires of the physical circuits similarly located with reference to one another and all other wires in the same lead and the earth. This is accomplished only by means of a systematic transposition arrangement.

When testing equipment is available, comparison tests should be made of the four line wires of the physical circuits:

1. Test the insulation resistance of each conductor. If found to differ appreciably—that is, the test indicates a lower insulation of one or more wires—those showing low insulation should be cleared of all leaks, such as tree interference, laying on crossarms, in contact with guys, etc.

2. A conductor's loop resistance test should be made of each line wire by having some one at the distant central office connect the wires as requested. This test is very conveniently arranged in the following manner:

Designate the four wires at the testing point as Nos. 1, 2, 3, 4. With No. 1 as the common test wire, measure the loop resistance of Nos. 1 and 2, then that of Nos. 1 and 3, and Nos. 1 and 4. Finally measure the loop resistance of Nos. 2 and 3. If there is a considerable difference between any one of the loop resistances, the trouble probably is in splice, a bad joint or in very rusty wire.

In addition to the foregoing and other tests, the physical and phantom terminal apparatus in the central office should be inspected; that is, the wiring from the phantom coils to the distributing frame and the magneto switchboard examined for loose connections and other defects.

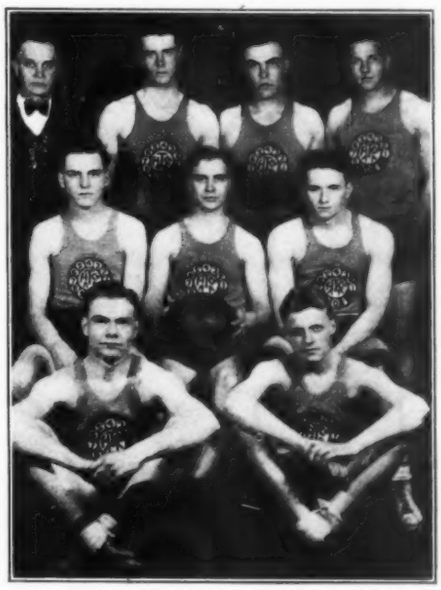
Basketball Record of Home Company Team, Fort Wayne, Ind.

The basketball squad, representing the athletic association of The Home Telephone & Telegraph Co. at Fort Wayne, Ind., recently concluded a very successful season. The team succeeded in winning 18 contests during the season, while losing only seven.

Some of the best teams in Fort Wayne and the surrounding territory went down in defeat before the fast-passing and the accurate shooting of the Home company squad. Participating in the Y. M. C. A. Commercial League, an organization that included the best court talent available in the city, the telephone quintet won 12 games while losing four. This record gave them second place, closely behind the championship club.

One of the bright features of the court season at the Fort Wayne company was the support given the squad by their fellow employes. Every scheduled game was a signal for many of the employes to be in attendance. Progress of the team was followed with much interest. Home Phone News, the company's house organ, carried accounts of the team's games, its schedule and the league standing.

Players participating in the games represented practically every department of the company. They are: Wayne Link, Ford



Basketball Squad of Home Telephone & Telegraph Co., Fort Wayne, Ind., Which Recently Closed a Successful Season.

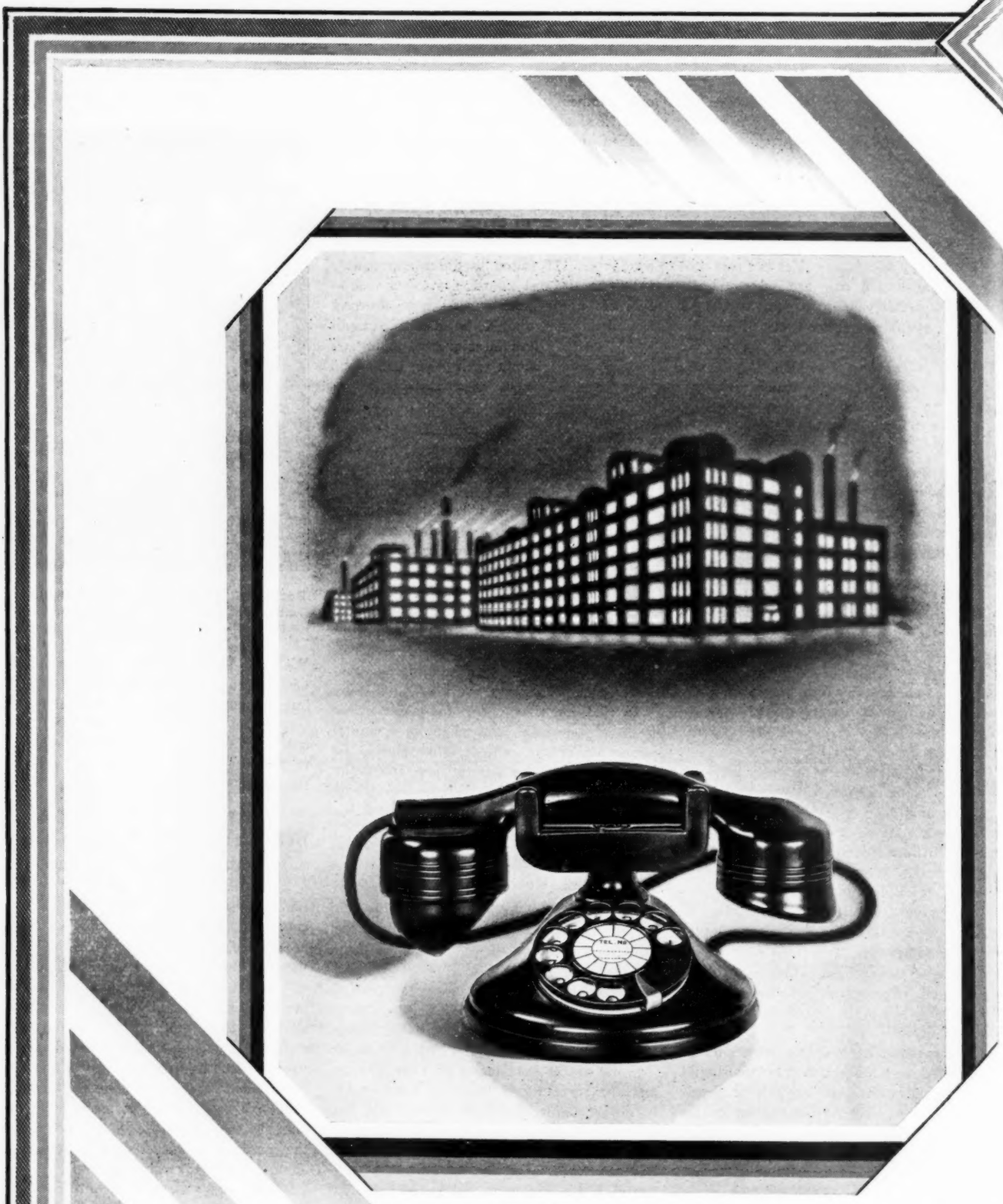
Weber, Orville Smith, Thomas Pillars, Charles Shoppell, Kenneth Doehrman, Wilbur Bobay, Walter Brueckner, Bruce Smith and Manford Fordyce. Ed Meier, coach of the team last year, again acted in the capacity of manager and coach for the squad.

Bell Stops Rural "Line" Calls for Advertising Purposes.

Line calls on rural telephone lines for the purpose of advertising have been discontinued in Iowa, according to S. W. Ellenwood, local manager for the Northwestern Bell Telephone Co. at Sibley.

"This does not mean that we refuse to put out line calls in case of emergency," said Mr. Ellenwood. "Primarily, the line is not an advertising medium, and it has been used as such for some time. Farmers have been called to the telephone by a line call time and again to hear some advertising announcement of little or no interest, and the matter has reached a stage where only about half of the people listen.

"Line calls will be used only for fire or burglar calls hereafter. However, if there is some announcement of supreme importance to be made, of course our lines will be open for use. For instance, if the county fair had to postpone a program because of weather, or some other equally important matter were to come up, we would be glad to announce the fact. But we don't want the line calls to be a nuisance to subscribers."



Blanked for dial Monophones for manual use, as well as dial Mo phones, are available; so that no matter whether a factory has a P-A a P. A. B. X., or a P. B. X., there is a Monophone to fit its ne

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Metallicizing the Rural Telephone Plant

Discussion of Advantages of Metallic Service, Which Far Outweigh the Disadvantages of Increased Maintenance Costs—Some Important Points to Be Considered in the Question of Making Grounded Lines Metallic—Cost Studies

By B. C. Burden,
Lincoln Telephone & Telegraph Co., Lincoln, Neb.

The advantages of metallic rural telephone service as compared to grounded are many. In the order of their importance they are: (1) Freedom from crosstalk; (2) reduces inductive interference; (3) eliminates unbalance noises set up when a grounded line is connected to toll; (4) reduces a negligible amount "summer static noises"; and (5) eliminates the variable factor of ground-rod-earth resistance.

Advantages of Metallic Circuits.

Only a few thousand feet of paralleling open-wire grounded circuits will set up crosstalk sufficient to permit "overhearing" between lines. For short distances, however, this effect is not objectionable as the "level" is low and secrecy is not expected nor necessarily required on rural lines; but with parallels of several miles, the crosstalk level rises to such magnitude as to greatly hamper conversation and "party lines" in effect become "community lines."

Merely making grounded lines metallic is sufficient to reduce this crosstalk tendency to a small proportion of its value with grounded circuits. This crosstalk reduction results from bringing the two sides of a circuit closer together so that the "net" effect of electromagnetic or electrostatic induction on the adjacent circuits is much less than where the distance between the sides of a circuit is the distance between wires and grounds, Fig. 1.

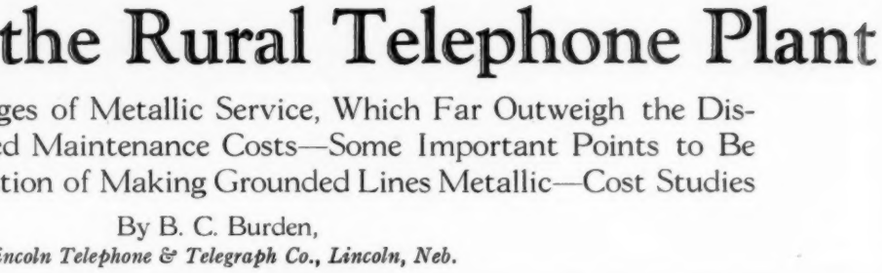

Power Line Paralleling Toll Line
e1
e2
Power Noise Current Flowing to ground at rural cord.
Long Toll Line
Transposition on toll Line to balance induced voltages from power Line.
Explanation: Most power line parallels set up voltages between telephone wires and ground (e1 and e2) but which will not produce noise in telephone circuits if they are metallic and are of the same resistance and leakage to ground. When a toll circuit having balanced power voltages on it is connected to a grounded circuit the balanced condition of the toll circuit is upset and excessive power noises will be heard on both circuits.

Fig. 2. Unbalance Condition Resulting from Connection of Long Toll Circuit to Grounded Telephone Line.

Where high voltage (above 6,600 volts) parallels of more than a mile are encountered, the noise induced in grounded lines is usually sufficient to make metallic lines a necessity, if even fair service is to be given. It is, of course, possible to obtain some relief from power induction on grounded lines by making the line metallic through the parallel and terminating in repeating coils at each end of the parallel.

The increasing spread of rural power supply lines will eventually force many, if not all, grounded lines to a metallic basis.

One especially objectionable feature of grounded lines which are paralleled by power lines is their performance during times of abnormal faults on the power lines. An abnormal fault, such as a leak to ground on a power line, will in many cases induce high potential power noises in the adjacent telephone line, which in turn, because of their high level, spread to all telephone circuits that are on the same lead even though not involved in the parallel. In some cases an entire lead serving a large number of subscribers may be rendered completely unusable due to a minor fault (from a power company standpoint) on the power line.

Metallic lines reduce the magnitude of the power induction for the same reasons as previously explained in discussing crosstalk. However, it is necessary that the series resistance and leakage to ground of the two telephone line wires be kept balanced, or excessive noise may develop in spite of the metallic circuit.

Every telephone man has noticed the large increase in crosstalk and power noise that results whenever we connect a metallic and grounded line directly together, even though both lines by themselves are normally quiet. This effect is due to upsetting the balance of the metallic circuit, thus permitting noise and crosstalk currents, which are normally balanced out, to flow to ground over the unsymmetrical grounded circuit, Fig. 2.

For this reason, whenever grounded lines are to be connected to toll circuits or long metallic rural lines which parallel power

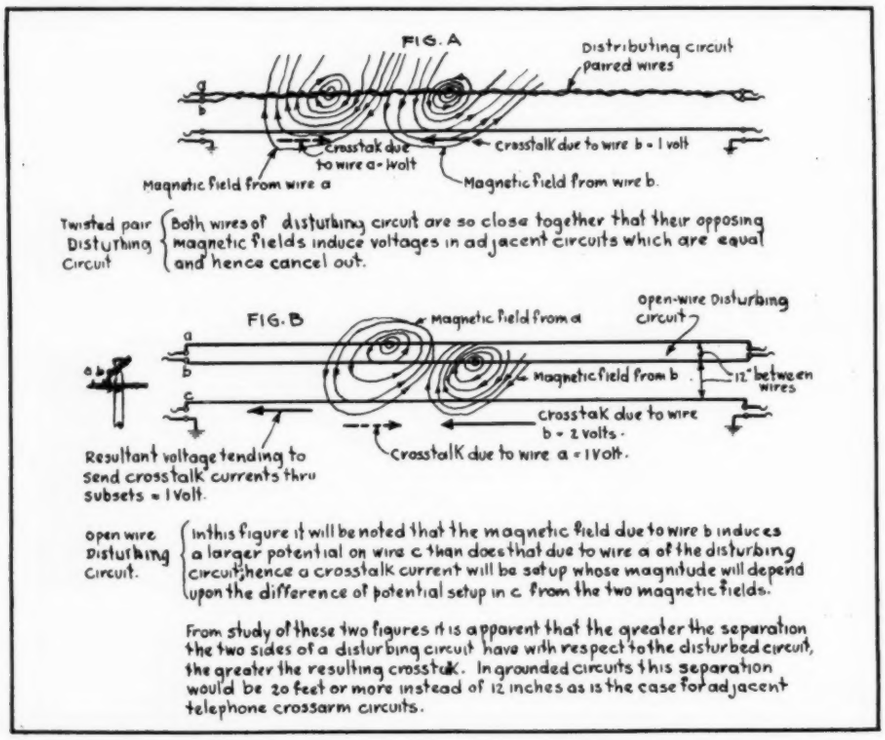


FIG. A
Distributing circuit paired wires
a
b
Crosstalk due to wire a = 1 volt
Crosstalk due to wire b = 1 volt
Magnetic field from wire a
Magnetic field from wire b.
Twisted pair Disturbing Circuit
Both wires of disturbing circuit are so close together that their opposing magnetic fields induce voltages in adjacent circuits which are equal and hence cancel out.
FIG. B
Magnetic field from a
open-wire Disturbing circuit
a
b
c
Magnetic field from b
12" between wires
Crosstalk due to wire b = 2 volts.
Crosstalk due to wire a = 1 Volt.
Resultant voltage tending to send crosstalk currents thru subsets = 1 Volt.
open wire Disturbing Circuit.
In this figure it will be noted that the magnetic field due to wire b induces a larger potential on wire c than does that due to wire a of the disturbing circuit; hence a crosstalk current will be set up whose magnitude will depend upon the difference of potential setup in c from the two magnetic fields.
From study of these two figures it is apparent that the greater the separation the two sides of a disturbing circuit have with respect to the disturbed circuit, the greater the resulting crosstalk. In grounded circuits this separation would be 20 feet or more instead of 12 inches as is the case for adjacent telephone crossarm circuits.

Fig. 1. Schematic Drawing Showing Relative Crosstalking Tendency of Grounded and Metallic Telephone Circuits.

lines, the cord circuits used should contain a repeating coil. The coil isolates the ground of the grounded line from the metallic line and yet permits the transfer of the voice currents from one line to the other.

"Summer static" is the popping noise we hear on grounded lines during summer evenings and is caused by atmospheric electrical effects. While not usually of large magnitude, this effect nevertheless results in a definite transmission impairment. Metallic lines are not entirely free from it, although it is usually but little more than noticeable on them.

Anyone who has maintained grounded rural lines through a dry season should be familiar with the variation in resistance beween a ground rod and the earth. Normally the resistance may be expected to range between 3 to 100 ohms; but if the soil gets dry and the rod is not properly installed, the resistance may rise to a much higher value, thus affecting both transmission and signaling.

Disadvantages of Metallic Service.

About the only disadvantage that can be charged against metallic farm circuits is the greater number of complete circuit interruptions that will occur due to the proximity of the two sides of the circuit. Grounded circuits may cross with one another but the subscribers can still talk and signal the operator. The obvious remedy is, of course, to build and maintain the metallic open-wire plant so that shorts will be at a minimum.

Should Metallic Service Be Given?

Recognizing the fact that metallic service is far superior to grounded, what should be done about converting our grounded lines to metallic?

If a company is in the enviable position of having a large surplus and net earnings which enable paying an adequate return on the outstanding stock, the answer is merely "do the job." But where the rates are low and inadequate to care for existing capitalization, the matter of improving the rural service by making the lines all metallic circuits had best be put on the option of the subscriber.

The best method of doing this is to study the increased investment required, and then set up a rural rate that will justify this increase. The subscribers should then be solicited and the advantages of rural metallic service explained. If a majority of the subscribers favor the better service at increased rates, it should be easy to get the approval of the "regulatory bodies" for the increased rates.

Another method of handling the matter of grounded lines is for the telephone company to decide for the subscribers what grade of service they should have, and then give them that service. The increased costs, if any, must, of course, be capitalized and a compensatory rate asked for. This method, while correct from the viewpoint that the company should know best the manner of giving telephone service, obviously is not wise from a public relations standpoint.

Engineering Considerations.

The first consideration in laying plans for converting rural lines to a metallic basis is the desirability of subscriber regrouping, either for purposes of getting a lower fill per line, or a better plant arrangement. Regrouping changes can best be studied by means of county maps (scale—1 mile equals 1 inch) on which the relative subscriber locations and telephone numbers have been spotted (Fig. 3).

The number of subscribers per line should not exceed 10, and if feasible should be limited to 8. The most desirable grouping may not always be advisable because of subscriber preference, but should be followed when possible. The subscribers to be grouped on one line are encircled as shown in Fig. 3.

After the "regrouping map" is completed, the existing feed routes should be studied with a view to changing to new and better routes if such a change seems economically desirable. The number of existing and new wires to be placed in each mile should be marked on the map.

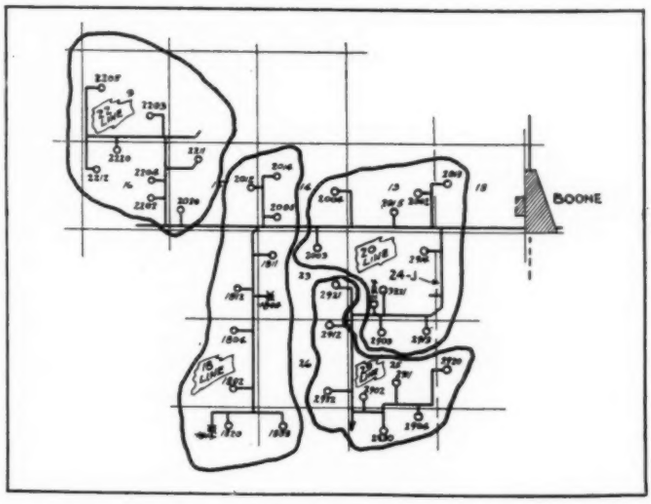


Fig. 3 Exchange Record Map Showing Subscriber Regrouping.

A field inspection of the poles and wire should then be made to determine the condition of each, and notes compiled on the amount of new material required in each mile.

If the wire is rusty and pitted, it should be replaced with new. If the existing poles are too small to carry the additional wire load, the lead should be strengthened either by intersetting (where long spans exist) or by building a new lead of the proper strength poles.

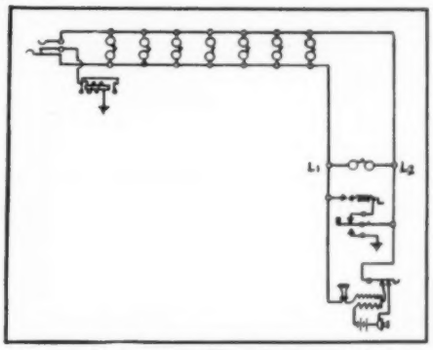


Fig. 4. Silent Signalling System for Rural Telephone Lines.

The possibilities of reducing the number of wires required for metallic service by phantoming should be investigated. In general, phantom circuits can economically be placed where groups of two circuits are on the same lead for two miles or more.

Phantoming of rural circuits will be found very satisfactory if a proper (though simple) transposition scheme is laid out to care for intra-group and adjacent circuit crosstalk* and if properly maintained.

Another important consideration in the metallicizing of rural lines is the desirability of offering silent—central office signaling—and semi-selective ringing.

"Silent operator signaling" can be provided by equipping the subscriber's set with a push button which grounds one side of the generator when the subscriber wishes to signal the operator. None of the bells on the line is actuated when the button is depressed as they are across the line, whereas the central office drop is connected to one side of the line and ground, (Fig. 4). Unfortunately, this system cannot be used with phantomed lines.

The use of silent signaling results in a transmission improvement as the subscribers on the calling subscriber's line are not aware that a call is being made, and the large loss due to eavesdropping subscribers is, therefore, confined principally to the called subscriber's line. One disadvantage of this system of signaling is the unbalanced condition of the metallic line due to the drop being connected from one side to ground. This may result in excessive noise if a power parallel is involved.

A semi-selective ringing system can be created by connecting half of the bells to each side of the metallic circuit and ground. Code ringing is used, except that the number is preceded by *W* or *J* and the regular two-party key used to select the proper side of the line.

Exchanges equipped with four-party harmonic ringing could, by grouping eight subscribers per line, give full selective

*TELEPHONY, Volume 94, No. 1, "Some Principles of Transpositions."

ringing. This could be accomplished by assigning the four frequencies with a *W* and *J* prefix to designate which side of the line to ring on and using a reversing key to throw the ringing circuit to the proper side.

One considerable disadvantage with arrangements for selective ringing is that the subscribers are prevented from signaling each other directly.

The size pole required to carry a given number of wires varies with the spacing, height of pole, kind of pole timber, and "loading area." Formulas are available by means of which the exact size pole required to carry a given number of wires and withstand the defined storm loading with any desired factor of safety, can be determined.

The accompanying table lists the size poles and recommended heights, and spacings, for various wire loads in storm loading areas. For those not familiar with "storm loading," information and a map of the United States showing these areas is given in Bureau of Standard Handbook No. 10, which can be purchased from the government printing office in Washington for 60 per cent.

It is not generally considered necessary to transpose rural circuits to reduce crosstalk as the amount of crosstalk experienced is usually not objectionable. This is not necessarily true if circuits are phantomed.

When stringing new wire and making the line metallic an ideal opportunity is offered, however, to transpose the circuits at a small cost; and if the transpositions are properly laid out both freedom from crosstalk and immunity from present and future power induction can be obtained.

Storm Loading Area.											
Heavy				Medium				Light			
Wire load.	Poles per mile.	Pole length, ft.	Class, ins.	Wire load.	Poles per mile.	Pole length, ft.	Class, ins.	Wire load.	Poles per mile.	Pole length, ft.	Class, ins.
Northern or Eastern Cedar—											
1- 2	35	16	5	1- 2	30	16	5	1- 2	30	16	4
3- 4	35	16	5	3- 4	30	16	5	3- 4	30	16	4
5- 6	35	16	6	5- 6	35	16	5	5- 6	30	16	5
7-10	35	16	6	7-10	35	16	5	7-10	35	16	5
11-12	40	20	6	11-12	40	20	5	11-12	35	20	5
13-14	40	20	6	13-14	40	20	5	13-14	35	20	5
15-20	45	20	6	15-20	40	20	5	15-20	35	20	5
Creosoted Yellow Pine—											
1- 2	30	16	5	1- 2	30	16	4	1- 2	30	16	4
3- 4	30	16	5	3- 4	30	16	4	3- 4	30	16	4
5- 6	35	16	5	5- 6	30	16	5	5- 6	30	16	4
7-10	35	16	5	7-10	30	16	5	7-10	30	16	5
11-12	40	20	E	11-12	35	20	5	11-12	35	20	5
13-14	40	20	E	13-14	35	20	5	13-14	35	20	5
15-20	45	20	E	15-20	40	20	E	15-20	35	20	5

Fig. 5. Suggested Pole Sizes for Rural Open-Wire Leads.

While space does not permit going into detail in regard to transposition design, a simple non-phantomed scheme which can be applied uniformly between section corners is shown in Fig. 6. This scheme will co-ordinate with power lines, when transpositions are placed as shown.

Because of the inherent propensity of rural subscribers to eavesdrop on their neighbors' conversation, a severe handicap is placed on the grade of transmission that can be given over rural party lines.

If the subscribers on the ends of long rural lines are to be able to talk to the end subscribers on the other long rural lines in the same exchange, or to toll, with good volume, then it is very essential that every effort be made to keep the various losses at a minimum.

The items that tend to cause excessive losses are: Too many subscribers per line (more than 10), long lengths of small gauge cable, loops longer than ten miles, and most important of all the loss caused by eavesdropping subscribers. The magnitude of this latter loss can best be appreciated from the following figures which represent the effect of a variable number of receivers off the hook on a typical party line, as determined by actual test:

Number of Eavesdropping Receivers Off Hook.	Relative Amount of Energy Reaching Operator from End Subscriber.
0	1
1	1/2
2	1/4
3	1/8
4	1/16

The reduction in volume represents the effect between the end subscriber and the operator with intermediate receivers of the hook.

It is evident from the foregoing figures that it would be impracticable to provide plant which would give the proper transmission with a number of receivers off the hook. However, until some means is available to reduce the loss caused by additional receivers across the line, it is very essential that as large a transmission margin as is economically feasible be provided.

Higher efficiency transmitters using three dry cells is one method of compensating for the longest loops. The use of a hook latch to reduce the loss caused by eavesdropping sets as well as battery consumption, is also of some benefit.

Wire of .104 copper, which costs approximately double the price of .109 iron wire, is one solution of providing a better grade of transmission on rural lines. Copper has the advantage of long physical life and constant transmission, whereas iron has a rather short life (comparatively) and field tests have indicated that the transmission equivalents or losses of typical .109 iron rural circuits approximately double in 20 years.

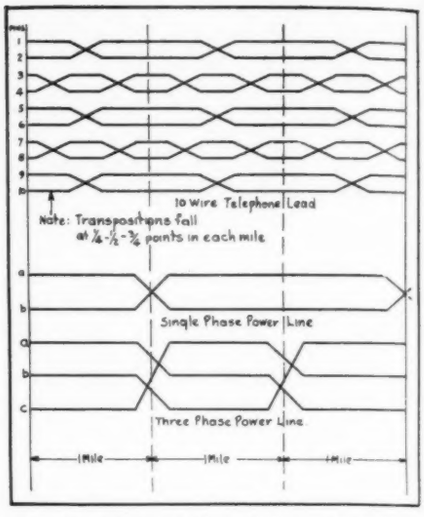


Fig. 6. Transposition Scheme for Telephone Rural Leads of Ten Wires or Less. Power Transpositions Should Be Placed in Paralleling Power Lines as Shown.

Many companies have gotten away from the changing transmission characteristics and relative short life of iron wire by the adoption of the Copperweld type wire. An initial transmission gain (as compared to iron), constant transmission over a period of years, and high strength are obtained with this wire.

A cost study of the economy of using copper, Copperweld, or iron wire should take into account the resulting transmission improvement and the effect it might have on the increased use of toll by farmers, as well as the reduced maintenance costs on the wire having the greater tensile strength.

The advantages of metallic service far outweigh the disadvantages of increased maintenance costs, and every company giving grounded service should consider a conversion to metallic. Put it up to the subscribers if necessary, but sell them on the idea of a superior service at a slight increase in price. Don't attempt to either cram metallic service down their throat, or merely ask them if they want another kind of service costing more money.

If they can be sold on the merits of metallic service, get busy and give them a real job. Make your plans on paper, get good standard material, put up lines according to current construction practices; and remember that subscribers judge service principally by operator efficiency, transmission, and number and length of service interruptions. The last two will be either good or bad, depending upon the kind of a construction and maintenance job you do.

Telephone News Items From Europe

Some Illustrations of Service Rendered by English Operators on Transatlantic Calls — New Automatic Exchanges Opened in London During 1929 — The Value of Telephone Extensions—Opening Service on the Channel Islands

By "Telephony's" Special London Correspondent

The British telephone service receives at all times its full share of criticism and hardly its fair meed of praise. For this it has itself perhaps to blame, for the tradition of government service is against any kind of self-advertisement, and only rarely are we vouchsafed an inside glimpse of its achievements.

Smart Sleuth Work by Operators.

So it happens that although the British service can furnish many instances of outstanding good work, it is usually to the "other side"—to you—that we go if we wish to quote any. Occasionally, however, a corner of the curtain is drawn—and here we have a bunch of instances to show that in the matter of tracing down transatlantic personal calls, at any rate, we on this side are, after all, not so very far behind.

A call for a prominent business man was received in London. Inquiry elicited the bare fact that he had gone to Southampton for the day. It happened that a complimentary luncheon was being given that day on board the Leviathan at Southampton docks, and that this fact had been brought to the operator's notice through the arrangements that had been made to link up the Leviathan with the telephone system, with a view to an address being given from New York over the transatlantic service.

The association struck the operator. She called up the Leviathan and inquired if the man in question was there—and there he proved to be. He was accordingly summoned to the telephone, and the call completed.

In the second instance, a call was put through from St. Louis, Mo., for a man who had lived in a remote village in Scotland, but who, so the local authorities reported, had died. The caller said he would like to speak to the man's executors, but of their names and whereabouts he knew nothing. The London operator called up the local town clerk and from him obtained the necessary information. The caller from St. Louis was then put through to the executors.

In a third case, the clue was even more vague. A call was received from New York for "Major Blank of the British Army." Inquiry was made from the War Office as to the whereabouts of all the Major Blanks on the War Office list. There were, it appeared, 12, 6 of whom were in this country, but their addresses were not available.

The leading naval and military clubs were called up to find if any of the six were members; and, if so, whether it was known if any of them had any association with the "calling party." One of the clubs replied in the affirmative, and as its Major Blank happened to be in the club at the time, the call was put through to him within 20 minutes of the original demand.

The fourth instance is of a somewhat different kind. A call was received from America for the Edinburgh branch of an American firm. Inquiries in Edinburgh showed that the firm was in neither the telephone nor the local directory. A search was made through the outstanding telephone orders, and it was discovered that the branch was still in process of establishment, and the telephone had not yet been installed.

The telephone order form, however, gave the address, and communication was established with a subscriber in an adjoining office. He was good enough to advise the occupants of the new office to communicate with the exchange. The manager happened to be out, but, after further telephone search, he was ultimately traced to the lounge of an Edinburgh hotel and the call completed.

London Goes Automatic.

The controller of the London telephone service in his annual report states that during the past year 16 new automatic exchanges have been opened, providing for an equipped capacity of 80,000 lines. Apparatus is being installed in eight further exchanges, and these will provide for a further 32,000 lines.

Equipment specifications have been issued for six exchanges having a combined initial capacity of 31,000 lines, while preliminary arrangements are in hand for other exchanges, bringing the total of automatic exchanges to be constructed in London during the next five years to 47.

Bathroom Talk with New York.

Miss Gracie Fields, the well-known British actress, has just built herself a London house of which she speaks as "the Home of My Dreams Come True." It is a house of many delights, but the feature most germane to the present letter is that there is in it an automatic telephone exchange with a telephone in every room. Both she and her husband, Archie Pitt—himself a notable producer and actor—are inveterate telephone users. Mr. Pitt voices his opinion thus:

"It is a commonplace to say that nobody who has ever had a telephone in his home will do without one again. I would go further and say that, if you have ever had a telephone in your bathroom, you will never bathe again in a telephoneless room. As for a telephoneless bedroom, the idea isn't conceivable.

"Only the other night, we wanted to ring up a friend in New York. I didn't know her number, but I set the New York exchange to find her. When they put her through I was in my bath, Gracie was in bed, and three friends in different bedrooms—but we all spoke and listened to our friend on the other side of the Atlantic. We spoke in turns; and in the end we all spoke at once.

"We don't do that sort of thing every day, of course, but we do find that for all manner of purposes—social, domestic and professional—the telephone's the thing."

Telephone for Channel Islands.

The Postmaster General now announces that the negotiations with the telephone authorities of Jersey and the Channel Islands for the opening of a public telephone service between Guernsey, Jersey and the mainland are practically concluded. An existing cable will be used, but its division and lengthening, together with the necessary work in land connections will take some time to complete.

In a recent letter, it may be recalled, I noted the fact that at a meeting of the Guernsey Chamber of Commerce it had been mentioned that the cable to be used was a secret war cable laid during the war from Dartmouth to France and lying not far from Jersey.

Choosing a Record by Telephone.

An enterprising gramophone dealer in Sunderland has introduced a useful innovation. A customer who wishes to buy gramophone records without the trouble of visiting the shop can, if he puts through a telephone call to the dealer, be switched over to a special booth containing an extension telephone.

Here an assistant puts on the instrument a number of records for approval, and those selected are delivered at once by messenger.

La Voix Humaine.

A play in which the entire cast consists of one woman and a telephone is being produced in Paris at the Comedie Francaise. M. Jeane Crockteau has not been content with merely an incidental use of the telephone. His drama, "La Voix Humane," is in its entirety one end of a telephone conversation—that of a woman, who, deserted by her lover makes a passionate but unsuccessful appeal to him

over the telephone to abandon his contemplated marriage and return to her.

The actress, Mme. Berthe Bovy, is a brilliant example of how personality can be "got over" on the telephone. The play should make an excellent broadcast.

Walking Telephones.

It is quite customary today, as the train steams into the station at Naples, to see several heads protrude from their various carriage windows and hear voices calling for a telephone. The telephone arrives at full speed in the hands of a uniformed attendant, whose arm is wound about by a long piece of flex. The attendant unwinds the flex from his arm, and fixes the plug into the nearest of the numerous telephone connections in the wall of the station.

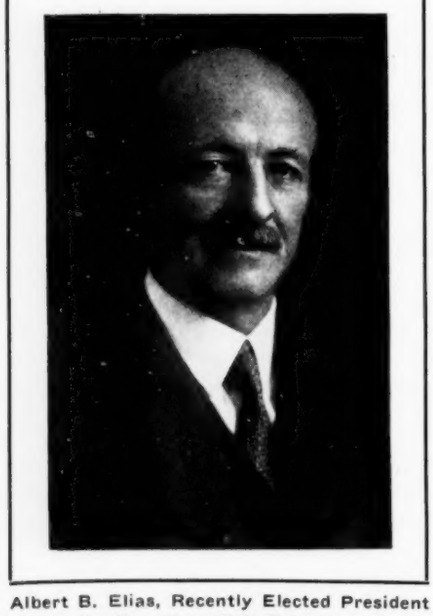
This is Italy's latest convenience for the traveling public. A sum equivalent to about two cents is demanded, and perhaps a little more is expected, despite the accusing eyes of Mussolini that gaze down from the station walls on the transaction.

Personal Notes from the Field

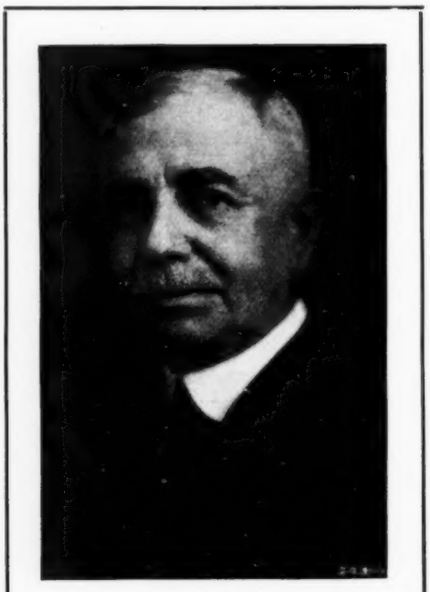
Albert B. Elias, first vice-president of the Southwestern Bell Telephone Co., on March 25 was elected president to succeed E. D. Nims, who became chairman of the board. Mr. Nims has headed the Southwestern company for more than 10 years, the last five of which Mr. Elias has been first vice-president.

Unlike Mr. Nims, who entered the telephone industry as a financial organizer, Mr. Elias has risen through the ranks of the Bell system which he entered 30 years ago as a galvanometer tester. Before becoming a telephone man, he had wide training and extensive experience as an electrical engineer, having built plants, overhauled properties, and installed electric equipment in many cities in the East, in the far West and in two countries of South America.

After having won his spurs with the New York Telephone Co. and as a representative of the American Telephone & Telegraph Co. in supervising construction projects on the Pacific coast, Mr. Elias went to the Southwestern company in 1913 as general plant superintendent for Texas. He became successively general manager for Texas, second vice-president, and in 1926, first vice-president, in which office he has been executive operating official for the company.



Albert B. Elias, Recently Elected President of the Southwestern Bell Telephone Co. to Succeed Mr. Nims, Was Formerly the Company's First Vice-President.



E. D. Nims, Retired President of the Southwestern Bell Telephone Co., Now Serves as Chairman of the Board.

He is a director in the Mississippi Valley Trust Co., in the St. Louis Chamber of Commerce, a member of the St. Louis Industrial Club, vice-president of the Glen Echo Country Club, and a member of the Bogey, Racquet and Noonday Clubs, all of St. Louis, and the Dallas Athletic Club.

Mr. Elias, whose ancestors came to the United States from Wales, was born in Springbrook, Pa. He is a bachelor, and lives at the Congress Hotel in St. Louis.

The retirement of Mr. Nims as president rounds out another chapter in one of the most interesting careers which have attended the growth of the nation-wide Bell communications system. He got into the telephone business at Perry, Okla., in 1898 as one of three partners who aspired to link together with 36 miles of wire three little towns of the then Indian territory in what for that day was a most ambitious project.

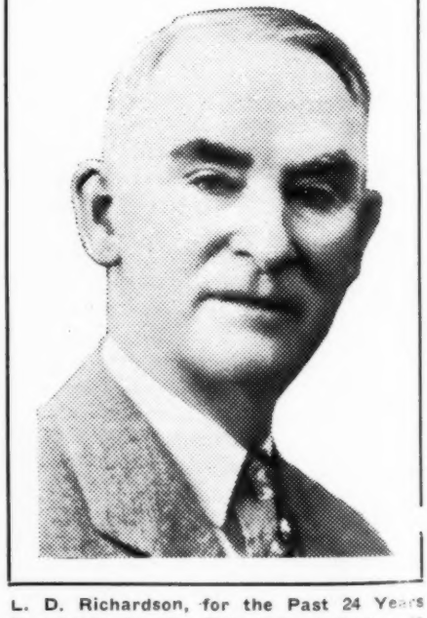
He was the organizing genius who assembled the units and built the Southwestern Bell Telephone Co. of today, which serves 1,353,000 telephones in Missouri, Kansas, Arkansas, Oklahoma and Texas. His financial sagacity has long been recognized throughout American telephone circles and is held in great respect in the councils of the Bell system.

Direct supervision of the operations of the Southwestern company will remain where it was placed about a year ago, with Vice-Presidents A. C. Stannard and F. M. Hoag. Mr. Stannard heads the engineering, plant and traffic departments, and Mr. Hoag is in charge of the commercial and associated activities.

L. D. Richardson, general manager of the Northwestern Bell Telephone Co. in North Dakota with headquarters at Fargo, after 43 years in the telephone business retired on April 1. I. G. Carll, now assistant general manager, will succeed him.

Mr. Richardson began his telephone work at Janesville, Wis., in March, 1887, just 12 years after the invention of the telephone. He became district manager at La Crosse, Wis., in 1891 and remained there until 1903, when he went to the Tri-State Telephone & Telegraph Co. at Minneapolis as general superintendent.

In 1906 there were a number of isolated telephone companies operating independ-



L. D. Richardson, for the Past 24 Years Prominent in the Telephone Industry in North Dakota, Has Retired After 43 Years in the Business.

ently in North Dakota. Mr. Richardson suggested to them that they merge into a single organization. Three months later the North Dakota Independent Telephone Co. was organized with Mr. Richardson as general manager. When the North Dakota company was taken over by the Northwestern Bell Telephone Co., he became division manager. He was appointed general manager in 1928.

During the 24 years that Mr. Richardson has been in North Dakota, the number of telephones there increased from 34,000 to 90,000.

The telephone was first introduced into the state in the spring of 1881, just five years after its invention. The first telephone exchanges in the state were started in Fargo, Grand Forks, Bismarck and Jamestown during 1882, all at about the same time. There were approximately 300 subscribers served from these exchanges.

I. G. Carll, for the past several months assistant general manager the Northwestern Bell Telephone Co. in North Dakota has succeeded L. D. Richardson as general manager, with headquarters at Fargo.

Mr. Carll has had wide experience in telephone work over a period of 18 years. He started as a clerk in the office of the telephone company at Des Moines in 1912. A few years later he went to Perry, Iowa, as local manager.

Among the positions he has held since then have been those of district manager for the company in Iowa and division manager in Minnesota from 1925 to 1928. He relinquished a position on the staff of the vice-president in charge of operations in Omaha to become assistant general manager of the company in North Dakota, on January 1 of this year.

H. B. Hamline, who has been in charge of the line and service department

I. G. Carll, New General Manager of the Northwestern Bell Telephone Co. for North Dakota, with Headquarters at Fargo.

of the Galva Telephone Co., Galva, Ill., for some years past, has resigned his position and will operate his farm near Good Hope, in McDonough county, Ill. He has been employed by the telephone company for about 13 years and for the greater part of the time was foreman.

Max F. Hosea, of Indianapolis, Ind., well known Independent telephone man and former secretary-treasurer of the Indiana Telephone Association, was married in late February to Mrs. Lillian Z. Elliott, of Newcastle, Ind. Mrs. Hosea is the principal owner of the Newcastle Courier. Mr. and Mrs. Hosea have taken up their residence in Indianapolis.

C. W. Morse, a former official of the Associated Telephone Utilities Co. of Elkhart, Ind., has been appointed assistant to Harry B. Crandell, general manager of the Bureau County Independent Telephone Co., Princeton, Ill. He will have supervision over the accounting division.

Mr. Morse has been connected for many years with the utilities industry as manager of light and power and telephone properties. During the last 15 years he served as general manager of the Steuben County Telephone Co. of Angola, Ind. When that property was purchased last summer by the Associated Telephone Utilities Co., he was transferred to the general offices in Elkhart. Prior to the war Mr. Morse was connected with the Detroit Edison Co. for 13 months.

Obituary.

Mrs. Mary D. Sheerin, widow of Simon P. Sheerin, formerly president of the Indianapolis Telephone Co. and the New Long Distance Telephone Co., Indianapolis, Ind., and at one time secretary of the Democratic National committee, died recently while traveling in Nice, France. She with two daughters went abroad in January. A week before her death she suffered a heart attack.

Mr. Sheerin, one of the most prominent men identified with the early Independent telephone movement, died on June 20, 1905, during the national Independent telephone convention being held at the Auditorium Hotel, Chicago. He was starting the response to the address of welcome when he suddenly collapsed and died instantly.

Great credit was given Mr. Sheerin for the progress made in Indiana in the early days by the Independent interests, and a genuine loss was sustained by his death. He was always one of the prime movers in convention matters, state and national.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Hearings in State-wide New York Telephone Co. Rate Lease.

Cross-examination of Professor Henry Earl Riggs, an expert witness for the public, occupied a considerable portion of the hearings last week in the New York Telephone Co. rate case in New York City.

Professor Rigg's testimony concerned the relationship between salvage property retired and the first cost of the property in an effort to show that the telephone company had under-estimated the amount of salvage and had set aside too much for depreciation charges each year. Frequent differences of opinion were heard in testimony concerning the salvage value of plants being retired for newer projects.

A "surprise" witness was Mark M. Jones, who described himself as a consulting economist of 51 Madison avenue, New York. He asserted that he had "no direct or indirect relation to the telephone company, never have had, and own no telephone securities."

"Few telephone users," he said, "would waste time opposing a 10 per cent return on a valuation over which there might be a difference of opinion as great as 25 per cent of the total alleged investment if they could be satisfied that the fundamental economics of the situation were not being otherwise tampered with."

Mr. Jones declared that telephone service in New York City was better than at any time in the last ten years; that the value of the service has steadily increased and has been much greater in proportion than the change in rates made or in issue. He commended the management of the company, declaring that the service might easily be found to be worth 200 or 300 per cent of what it was worth to the user ten years ago.

"Certain public authorities prominent in these proceedings have not acted with 100 per cent support from the so-called public," he continued, "nor does it even appear to a bystander that they can show grounds for their position and attitude other than politics. I desire to be on record, even if

entirely alone, as one telephone user in the city of New York whom the corporation counsel does not represent.

"To the bystander it appears that this telephone case can not be entirely disassociated from the attempt now being made over a wide front in the relations between governments and business in the United States to substitute the ball and chain of politics for the intelligent and carefully adjusted counter-balance weight of economics."

Strong objection was made to the statement of Mr. Jones going on the record. Commissioner George R. Van Namee, George R. Lunn and Neal Brewster ruled that it could stand as a statement of a citizen interested in the case.

A. D. Welch, vice-president of the company, in cross-examination by Mr. Hilly admitted that the expected decrease in calls in the financial district was a contributing factor in arriving at the new rates. He explained, however, that the estimated reduction of calls in Wall Street was not the sole factor in devising rates for Manhattan.

Mr. Welch said the call rate for 1926 was 5.35 while the rate for 1929 was 5.56, the highest on record. The call rate for 1930, he said, was estimated at 5.37 as a result of business depression.

In explaining increased expenditures of the company during the past few years, Mr. Welch justified the use of $624,000 in 1929 for canvassing on the ground that "a progressive business" should expend funds to improve sales. Corporation Counsel J. W. Hilly, of New York City, pointed out that, while the company spent $1,441,000 on advertising in 1929, its plans called for the expenditure of $1,779,000 this year. He asked Mr. Welch to explain the increase of $338,000.

"I believe it is necessary to advertise," Mr. Welch replied. "The amount of money spent by this company for advertising is comparatively small.

"Some is directed toward the extension of the company's business; some toward information for the public so that it might make the best use of the service; some is purely institutional; some is for toll business, and some is incident to the introduction of the new rate schedules. A great part of our advertising is done in newspapers."

Through Archibald S. B. Little, mechanical engineer and city's witness, Mr. Hilly placed in the record 12 charts of figures in an attempt to show that the increased rates were excessive. Mr. Hilly said there was no necessity for setting aside an accrued depreciation reserve when the company's returns each year provided other means for meeting actual retirement needs.

Mr. Little testified from the charts that the company had increased its accrued depreciation reserve from $10,615,991 in 1919 to $204,945,692 in 1927 on the basis of 5 per cent interest and to $229,771,549 at 7 per cent interest.

If the company charged subscribers only $19,883,000, he said, as cited in its provisional estimate as necessary to retire depreciated plant and apparatus in 1930 instead of $32,000,000 that it was said it would charge, the company would receive a return of 7.81 per cent on its investment, even if estimated on the old rates.

Edward L. Blackman, counsel for the company, objected to the exhibits, but Commissioner George R. Van Namee, on behalf of the commission, accepted them "for what they are worth."

Mr. Blackman contended in his objections that the court had held that the company required a certain amount of working capital in connection with the number of stations the company had in 1928 and that the company was entitled to the same proportionate amount of working capital in connection with the greater number of stations today.

"Mr. Little has made no increase in the working capital between 1928 and the present," Mr. Blackman said, "although the company has 25 per cent more property in stations today than it had in 1928."

In objecting to revenue figures offered in the charts by Mr. Little, Mr. Blackman contended that the company was setting aside 4.8 per cent of its property each year to take care of retirements. He said this was done pursuant to the so-called "straight-line" depreciation methods the company was directed by the commission to follow.

Mr. Little, he said, was proposing to substitute the actual amount of retirement instead of the amount of money the company had set aside on the straight-line basis. That, Mr. Blackman continued, would give rise to steadily increasing rates instead of stable rates because the property is new and actual retirement will get heavier each year as the property grows older.

Supreme Court Holds Commission Order Not Unreasonable.

The Supreme Court of Ohio, in an order issued February 5, 1930, in the case of the Beaver Telephone Co. v. the Ohio Public Utilities Commission, held that where the commission had found certain territory was the scene of a dual telephonic development and was not preempted by one company, and ordered another company to give service to applicants in such territory, the order was neither unreasonable nor unlawful.

The court found that certain residents of a school district had filed an application with the commission asking that the Ohio Bell Telephone Co. be permitted to furnish service to them and that the Beaver Telephone Co. be notified of that proceeding. The Bell company filed an answer stating that the Beaver company was furnishing service in that locality and that the Bell company had not held itself out as furnishing service therein.

The Beaver company intervened and opposed the application, claiming that it had preempted the territory and was giving adequate service. It appeared that, some years before, both companies had come to an understanding whereby a dividing boundary line in the district was to mark their separate activities, but this line was ignored by both companies.

The commission therefore found that the territory was the scene of a dual telephonic development and was not preempted by the Beaver company. The commission ordered the Bell company to give service to residents of the district. Both companies excepted to the order but only the Beaver company applied for a rehearing, which was denied, and that company was the only one prosecuting error.

The court stated that it could not say that the commission erred in its findings or that its order was unreasonable or unlawful.

Indiana Company Brings Action in Circuit Court.

The Whitley County Telephone Co. of Columbia City, Ind., has begun action in the circuit court there against the Indiana Public Service Commission asking that orders of the commission to require the company to restore toll connection with the Northern Indiana Telephone Co. of North Manchester, Ind., be set aside.

The Columbia City company alleges the public service commission erred in overruling the Whitley county company's motion to dismiss the petition of the Northern Indiana Telephone Company by reason of the fact that the Whitley company is adversely affected by this order and that the order in itself is unreasonable, unlawful and void and should be set aside.

Lincoln Company Asks Increased Rates in Hastings Area.

The Lincoln Telephone & Telegraph Co. has applied to the Nebraska State Railway Commission for authority to increase its rates at its Hastings exchange and in the Hastings exchange area, which includes the towns of Glenvill, Hansen, Juniata, Pauline and Prosser. The company says that its revenues last year were $160,907, which included $22,807 as the 25 per cent commission for originating toll messages, $140,007 exchange revenues and $3,851 from miscellaneous sources, against which is to be charged a licensee charge of $2,423.65.

Expenses were $160,907, leaving but $3,334, which is less than 1 per cent of the book cost of the property in place. It estimates that the rates asked for will give a

(*Please turn to page* 44.)

Creo-pine
CREOSOTED SOUTHERN PINE
TRADE MARK REG.

The name Creo-Pine on Creosoted Southern Pine is more than a trademark. It is a pledge of honest, accurate manufacture and rigid inspection from standing tree to finished product. Back of it are twenty-two years of wood preserving experience.

For Tomorrow's Voice Highways

Larger and larger cables and ever increasing long distance circuits are placing a heavier load each day on telephone poles. But however heavy the load the message must go through quickly—with no allowance for pole failures. To meet these new conditions—you may buy Creo-Pine poles. They are made of creosoted Southern Pine. Numerous tests have proven it the strongest of common pole woods. Effectively fortified against decay and the attacks of insects by the S. W. P vacuum-pressure process of creosote injection, they maintain this strength over a long period. Shipments can be made from either of our treating plants, and further information about Creo-Pine poles will be given gladly by any of the sales offices listed below.

Creo-Pine Products
Include:
Poles
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SOUTHERN WOOD PRESERVING CO.
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Treating Plants **EAST POINT, GA., *and* CHATTANOOGA, TENN.**

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NEW YORK · PHILADELPHIA · PITTSBURGH · TOLEDO
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Stromberg-Carlson's 1929 Net Earnings

All Earning Records of Stromberg-Carlson Telephone Mfg. Co. Broken According to 1929 Report of Company and 1930 Business so Far Substantially Ahead of Last Year—Comments on Business and Policies by Vice-Presidents

Not only were all earning records broken by the Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y., last year, according to the report mailed recently to stockholders, but 1930 is running substantially ahead of the banner year, and promises to exceed 1929.

Net profits for 1929, after provision for federal taxes, interest, reserves for depreciation, and all other charges in keeping with the soundest accounting practices, were $1,070,055.58. The previous record year was 1926, when profits totalled $971,262.97.

Notwithstanding the fact that the first six months of 1929 presented a new peak in the business of the nation, January business this year was 80 per cent greater in volume than the corresponding month last year. February this year was greater by 40 per cent than February, 1929; and March, up to the last week, was running 30 per cent ahead of March, 1929.

"These are truly remarkable statistics, in view of the present economic situation and the trend of business," said George A. Scoville, vice-president in charge of sales, and Wesley M. Angle, vice-president and secretary, in commenting on the condition of the company, in the absence of W. Roy McCanne, president and general manager, who with Mrs. McCanne, is taking a European trip.

At present the company employs 1,534 persons in Rochester. This compares with 1,348 at this time last year, and 959 in 1927. In the last 15 years the company has shown an average increase in business of 20 per cent annually. Since the new company was formed in 1914, a dividend rate, once established, has always been maintained or bettered.

The strong financial condition of the company is reflected in its consolidated balance sheet, covering the Rochester company and its Canadian and Australian subsidiaries. The Canadian company did $750,000 business last year, and made a new high record in January of this year.

The consolidated balance sheet audited by Price, Waterhouse & Co., shows that the total assets of the company are $9,681,612.72, including $316,614.94 in cash, $107,705.39 in notes receivable, $2,769,184.89 in accounts receivable, less reserve; and $3,535,515.01 in raw materials, supplies, work in process and finished products at the lower cost or market.

Of the earnings of $1,070,055.58 last year, $65,001.75 were paid in dividends on the preferred stock, and $334,476.74 in dividends on common stock, including two extras; and the balance of the earnings, or $670,577.11, has been added to surplus, bringing the surplus up to $3,047,428.86 as of December 31. This is earned surplus and is significant of the sound financial position of the company.

Besides this unappropriated surplus, a reserve of surplus amounting to $500,000

The Stromberg-Carlson Telephone Mfg. Co. Under the Leadership of President and General Manager W. Roy McCanne, Last Year Enjoyed the Best Business in Its History and 1930 Is Already Showing Even Better Business.

has been set up from earnings for investment in addition to property. In arriving at these figures, adequate reserves have been established against raw materials and piece parts.

In addition to the net profits of $1,070,055.58 last year, a reserve of $200,000 —which was at December 31, 1928, known as a reserve for market fluctuations in inventory values and applied directly against inventory to reduce it to the lower of cost or market—has been freed from such application and is now treated as an allocation of surplus described as a reserve for contingencies. These net profits of $1,070,055.58 work out to just under $4.00 a share; and if the $200,000 just mentioned were considered as representing additional earnings for 1929, the per share earnings would become proportionally greater.

Both Mr. Angle and Mr. Scoville asserted that the company has never been in a better position than today, nor has its prospects been more promising. They stated that all radio sets on hand were "live merchandise." In spite of the market crash of October and November of 1929, the company reached its greatest amount of sales for any one month in October, fell only slightly behind that record in November and finished the year with a good December.

The volume of business in 1929 was $12,500,000. This compares with $10,000,000 in 1926, the previous record year for earnings. Heavy expenses were incurred last year in moving into the new $1,500,000 plant, which contains 360,000 square feet of manufacturing space and is regarded as a model of its kind.

New and more efficient machinery has replaced much of the older equipment, departments have been arranged and equipped to afford the best possible opportunity for efficient and high quality production; and under the guidance of Edward A. Hanover, vice-president in charge of production, the factory is ready to meet any demands made on it. With the expense of moving behind the company, an equal amount of business should make possible greater earnings for 1930, both Mr. Angle and Mr. Scoville said.

Another $100,000 was added to the advertising appropriation last year, and it cost the company $250,000 to put the concerts of the well-known Rochester Civic Orchestra on the Blue radio network. The company likewise maintained its popular station WHAM, the expense involved in its maintenance and in putting out the nation-wide weekly Stromberg-Carlson program, being regarded as well spent for the furtherance of the company's position in the radio industry.

An adjoining plot of land of 15 acres has been purchased for $100,000 to assure room for future expansion. Extensive experimental work is being conducted in the laboratories under the direction of Ray H. Manson, vice-president in charge of engineering of the company. The company is licensed under all groups of radio patents, giving it complete freedom of manufacturing and placing it on the ground floor for any development in the industry. Besides, the company is making extensive experiments and has a number of developments ahead of it both in radio and telephone apparatus.

This combination of radio and telephony is unique but highly advantageous to the company and its customers in both kinds of apparatus, for the peaks of the radio and telephonic manufacturing activities come at different times of the year. The combination gives stability to the employment of the company's workers and makes it more possible to meet peak de-

ASSOCIATED TELEPHONE AND TELEGRAPH COMPANY

Kansas City Chicago New York

Paid-Up Capital Over $15,000,000

THE ASSOCIATED TELEPHONE AND TELEGRAPH COMPANY, which is owned by British and American Interests, undertakes outside of United States of America:

1. Engineering, Construction, Management and Operation of Complete Telephone Installations.
2. The Examination, Negotiation and Acquisition of Telephone Concessions.
3. Financing Telephone Operating Properties, or Extensions to Existing Plant.

THE ASSOCIATED TELEPHONE AND TELEGRAPH COMPANY and its Allied Companies own and manage directly or indirectly upwards of 300,000 Telephones, and are connected with important British and other Manufacturing and Financial Interests throughout the World.

Corporate Headquarters: 100 West Monroe Street, Chicago
Cable Address: "TELANTEL"

Bankers in U. S. A.

Harris Trust and Savings Bank, Chicago, U. S. A.
Continental Illinois Bank and Trust Company, Chicago, U. S. A.
Commerce Trust Company, Kansas City, U. S. A.
Guaranty Trust Company of New York
Bank of America, New York, U. S. A.
U. S. Financial Agents: Theodore Gary and Company, Kansas City

Bankers in London

Westminster Bank Limited
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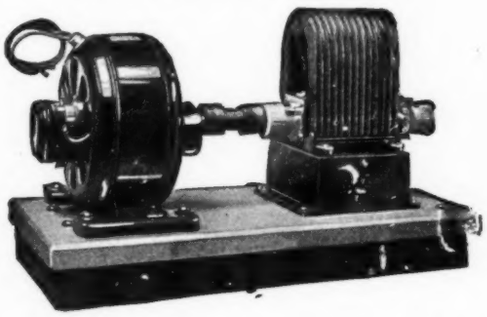
Stafford House, Norfolk Street, Strand, London, W. C. 2.

HOLTZER-CABOT

Magneto - Ringing - Motor - Generators
ALWAYS DEPENDABLE



These units effectively replace all old-fashioned hand and battery ringing methods. Extreme simplicity of operation and low cost offer advantages over all other devices.

Cuts operating expenses by eliminating expensive and troublesome battery equipment.

Make possible a swift, sure, carefree service that pleases both subscriber and operating company as well.

Can be supplied for any voltage or special current. A thorough test will convince you.

Complete data and specifications on request.

HOLTZER-CABOT ELECTRIC CO.

125 Amory St., Boston, Mass

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PROGRESS DEMANDS Many New Designs--

But Old Favorites Are Still Essential

COMMUNICATION engineering has made rapid strides in the past few years. The world today seems small indeed when one can communicate with the opposite sides of the earth, across mountain range, ice and snow and ocean's wide expanse as easily, audibly and as quickly as across the width of a room. But combinations of wire and radio have introduced technical considerations of extreme importance and operating problems which only electrical measuring instruments of great refinement and reliability can solve.

Throughout all these progressive developments Weston research and manufacturing facilities have kept pace with communication needs—producing new types of instruments to meet each phase of progress. Weston has continuously served the telephone field as technical collaborator and pioneer, each year bringing out new designs essential to the industry's progress.

In spite of these progressive developments, the older models like old friends, continue to give important service. Among these are the wire chief instruments, known as Models 24 and 57, the indispensable line inspectors found in practically every office and on every system large and small throughout the country.

Whatever your testing problems, take them up with Weston, the world's accredited laboratories for electrical measurement research and the acknowledged leader in the manufacture of quality instruments.

Weston
PIONEERS SINCE 1888
INSTRUMENTS

WESTON ELECTRICAL INSTRUMENT CORP.
576 Frelinghuysen Avenue Newark, N. J

mands that come in either of these lines.

The most conservative merchandising policy has been adopted, Mr. Scoville said. The company has avoided the pitfalls connected with mushroom expansion. It has had 35 years of experience in the manufacture of products for voice transmission, the present development of radio voice transmission apparatus being just one step in its progress. Never in its history have its products been dumped on the market. Prices have always been maintained. The policy of the company, Mr. Scoville said, has been dedicated to quality products at fair prices, and its production flows into the most substantial channels, he asserted. He pointed out that radio sales in New York and other large congested areas have been increasing substantially.

Mr. Angle said that the company has always tried to prevent speculation in its stock, and in every way has kept its affairs moving along the soundest and most conservative lines. The company is controlled by its employes and their families. He pointed out that since December 31, last, the notes payable of the company have been reduced from $1,100,000 to $600,000.

To assure adequate facilities for growth, the company has continued its lease on the old factory which covers 190,000 square feet of floor space, and some departments continue to operate there.

With nothing but active merchandise in possession of the company; with its dealers urging the maintenance of the high quality production in a quality selective field, and with the surplus stocks of radio receivers in the market being consumed, the prospects for this year are most gratifying to the company's business, both Mr. Scoville and Mr. Angle asserted.

They pointed to the work that is being done to assure the permanency of the company's position as makers of high quality merchandise; the elimination of inflation in production and of any dumping of goods on the market; the maintenance of quality and price, and the guidance of the production of the company into the hands of substantial retailers, assuring satisfaction to the purchasers of the radio receivers and maintenance of the company's standards.

"Big things are ahead of the Stromberg-Carlson Telephone Mfg. Co.," Mr. Angle said.

Directors of the company are: Wesley M. Angle, Fred C. Goodwin, Edward A. Hanover, W. Roy McCanne, Ray H. Manson, George A. Scoville, George W. Todd and J. Foster Warner.

The officers of the company are:

Chairman of the board, George W. Todd; president, W. Roy McCanne; vice-presidents, George A. Scoville; Edward A. Hanover, and Ray H. Manson; vice-president and secretary, Wesley M. Angle; treasurer and assistant secretary, Edwin C. Roworth; assistant treasurer and auditor Wilbur W. Hetzel; and comptroller, George V. Lennon.

Surplus at December 31, 1928		$2,376,851.75
Net profit for the year after provision for federal taxes and interest		1,070,055.58
		$3,446,907.33
Less preferred dividends paid	$ 65,001.73	
Less common dividends paid	334,476.74	399,478.47
Surplus at December 31, 1929		$3,047,428.86

Consolidated Profit and Loss and Surplus Account, Stromberg-Carlson Telephone Mfg. Co., for the Year Ending December 31, 1929.

ASSETS		
Current Assets:		
Cash on hand and in banks	$ 316,614.94	
Notes receivable	107,705.39	
Accounts receivable, less reserve	2,769,184.89	
Cash surrender value of life insurance policies	17,847.00	
Raw materials, supplies, work in process and finished products at the lower of cost or market	3,535,515.01	$6,746,867.23
Sundry investments, including amounts due by employees under stock subscription plan		125,209.77
Investment in and advances to foreign affiliated company, less reserve		69,697.42
(There is also a contingent liability in respect of guarantee on bank loans to this company of £14,790)		
Fixed Assets:		
Land, buildings, machinery, factory, equipment, tools, etc., less reserve		2,696,156.23
Deferred charges		43,682.07
		$9,681.612.72
LIABILITIES		
Current liabilities:		
Notes payable	1,100,000.00	
Accounts payable and accrued liabilities including provision for 1929 federal taxes	1,151,383.86	2,251,383.86
Reserve for contingencies		200,000.00
Capital Stock and Surplus:		
Capital Stock:		
Preferred 6½ per cent cumulative:		
Authorized, 15,000 shares of $100 par value each		
Issued and outstanding, 10,000 shares of $100 par value each	1,000,000.00	
Common:		
Authorized, 320,000 shares of no par value		
Issued, 268,800 shares at fixed value of $10 per share $2,688,000.00		
Less 520 shares held in company's treasury 5,200.00		
268,280 shares in hands of public	2,682,800.00	
	3,682.800.00	
Surplus:		
Appropriated for investment in additions to property	500,000.00	
Unappropriated surplus	3,047,428.86	7,230,228.86
		$9,681,612.72

The Stromberg-Carlson Telephone Mfg. Co. and Its Subsidiary Companies Consolidated Balance Sheet, December 31, 1929.

Jokesters' April Fool Calls Foiled by Telephone Operators.

Another of the old folk ways in New York City is giving way to modern efficiency and big business, it appeared on April 1 when April Fools' Day came and went, with the New York Telephone Co. fighting to make the town safe for "the goats."

The old office game of leaving a memorandum on the boss's desk, telling him to "Call Mr. Fox at Fordham 5560" or "Mr. Fish at Whitehall 1560" did not work very well this year. If the former number was called on April 1 a voice with a smile asked:

"Are you calling the zoo?"

Or if the latter was called:

"Are you calling the Aquarium?"

It spoiled the joke but the telephone company said it supervised the numbers only at the request of subscribers. There was quite a large number of requests it was said.

SERVICE and SATISFACTION Quick!

Lead Covered Telephone Cable

Double Paper Wrapped

250 pair.....65c per ft.
300 pair.....75c per ft.
400 pair.....95c per ft.

Stock lengths.

Cut lengths 10% additional.

Suttle Equipment Co.
FACTORY AND MAIN OFFICE
Lawrenceville, Illinois

TELERING

For Central Office and PBX Ringing

ONE REED!

ONE CONTACT!

IDEAL WAVE FORM

ORDER ONE ON TRIAL.

NO OBLIGATION TO KEEP

Fully Guaranteed

Converts 60 Cycle Lighting Current to 20 Cycle Ringing Current.

POSITIVELY NO RADIO INTERFERENCE

Very low current consumption.

Model EX-3 has been proven the ideal ringing machine by hundreds of satisfied users.

Price $44.00 — F. O. B. Elyria
IT PAYS FOR ITSELF

Sold by Leading Telephone Distributors

Telkor, Inc., Elyria, Ohio

(Write for booklet)

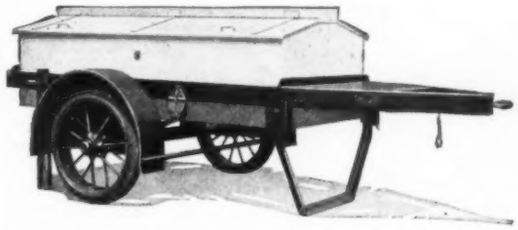
Crapo GALVANIZED PRODUCTS

The pure zinc coating on *Crapo* Galvanized Telephone Wire and Strand is *non-peeling, non-cracking.* Even when subjected to splicing, twisting or bending, this protective coating remains uninjured.

That is why *Crapo* Galvanized Products are outlasting all others in actual service. That is why users, year after year, are reducing maintenance costs to new low levels....

Crapo Galvanized Telephone Wire and Strand can be obtained from representative Jobbers. Insist upon *Crapo* quality! You can identify it by the *Crapo* Tag....

Indiana Steel & Wire Co.,
Muncie, Indiana



THE ALL-STEEL HEAVY DUTY TOOL BOX

The Littleford Heavy Duty Tool Box is designed and constructed to properly store and transport jack hammers, drills, lead furnaces, shovels, and all other equipment needed by maintenance departments. The All-Steel Box, with low-slung chassis mounted on semi-elliptical springs, will stand the most severe abuse. Rubber tired wheels, with Timken bearings, are standard equipment.. Write for complete information.

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•ALL-STEEL
TOOL BOXES
LITTLEFORD BROS. 423 E. PEARL ST. CINCINNATI, O.

WHAT THE COMMISSIONS ARE DOING.

(*Continued from page 38.*)

revenue of $168,914, and that as expenses can be cut to $155,849, the property will earn $37,849, or about 6 per cent on the investment.

The company asks authority to increase the business rate for individual service at the Hastings exchange, which includes area service, from $4.50 a month to $5.50; two-party business from $3.75 to $4.50; individual residence, from $2.00 to $2.75; two-party residence from $1.75 to $2.25, while 10-party residence, or farm service, remains at $1.75, which is the standard in South Platte territory, although higher in the Bell territory. The company desires to increase rates at the other exchanges from $4.00 for individual business service to $5.00; two-party business service from $3.50 to $4.25; individual residence from $2.00 to $2.50; two-party residence from $1.75 to $2.25, with 10-party or farm residence, remaining at $1.75.

The application sets up that the company has these investments: At Hastings, $483,424; Glenvill, $22,571; Hansen, $32,354; Juniata, $19,511; Pauline, $10,989; Prosser, $13,698, a total of $582,550. During the year it will invest enough additional to bring the entire investment up to $610,922, upon which it desires to earn $37,849. It says that the present rates are unreasonably low, unjust and confiscatory, and that it is entitled to a just return on its investment. It points out that the new rates are no higher than for cities in the states of the same size, notably the nearby city of Grand Island, served by the Northwestern Bell Telephone Co., where higher rates have long been in effect.

The company says that the present rates were put into effect ten years ago, since which time the exchange, which is the second largest in the company's territory, has grown from 3,280 to 4,890 stations, which materially increases the operating cost per station. During the same period there has been a material increase in the cost of supplies, while labor costs have greatly increased.

It is cited that where ten years ago plant men averaged $83.55 a month they now average $98.25; operators' average pay has gone up from $45.84 to $55.90 and commercial men have increased their average pay from $66.33 a month to $102.00.

The Hastings Democrat, weekly newspaper, has been trying to raise a defense fund by public subscription, to fight the increase, but has had little success.

Wisconsin Company Authorized to Issue Mortgage Bonds.

In a recent certificate of the Wisconsin Railroad Commission, the Urban Telephone Co. of Clintonville (formerly called Marion & Northern Telephone Co.) was authorized to issue $25,000 principal amount of its first mortgage bonds dated November 1, 1929, maturing November 1, 1944, and bearing interest at a rate of 6 per cent per annum.

The bonds are to be sold at not less than 97½ per cent of the par value thereof and the proceeds, together with the proceeds derived from the sale of $50,000 of like bonds previously authorized, are to be used for the purpose of paying for additions and extensions to its property and plant.

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

April 1: The Pacific Telephone & Telegraph Co. directed to include within the suburban area of its Sacramento exchange, on or before October 1, 1930, all of the present Carmichael colony, not now included in such suburban area, and to furnish service therein under the rates, rules and regulations at present in effect in its Sacramento exchange for similar service elsewhere under similar conditions. This action was taken after public hearing on the complaint of California Farm Bureau Federation and Sacramento County Farm Bureau, in which the commission was requested to issue its order to the company to transfer the territory in question from the Fair Oaks exchange area to Sacramento exchange area.

ILLINOIS.

March 11: Order approved authorizing Illinois Commercial Telephone Co. to issue and sell 1,237 shares of its common capital stock without par value and $500,000 aggregate principal amount of its 1st mortgage gold bonds, dated March 1, 1928, maturing March 1, 1948, bearing interest at the rate of 5 per cent per annum upon conditions set forth in order.

March 18: Order approved extending until September 22, 1930, period of suspension of the proposed rates for telephone service in Cordova, Rock Island county, stated in rate schedule Ill. C. C. 3, of the Cordova Telephone Co.

March 18: Order approved extending until September 30, 1930, period of suspension of the proposed rates for rural telephone service at Tri-City, stated in rate schedule Ill. C. C. 1, first revised sheet 1, of the Southwestern Bell Telephone Co.

March 18: Order approved authorizing the Illinois Commercial Telephone Co. to purchase all the property of the Ashkum Mutual Telephone Co. located in Ashkum and vicinity, for the consideration of $837.50; also providing that no rate, rule or regulation now in effect by Illinois Commercial Telephone Co. covering telephone service in Ashkum and vicinity shall be changed without approval of the commission and that the rates for unified service following the consolidation of the two exchanges shall be those now in force by the Illinois Commercial Telephone Co. at Ashkum and vicinity.

March 18: Order approved dismissing petition of city of Granite City, Madison county, for reduction in rates for telephone service at Granite City by the Kinloch Ling Distance Telephone Co. of Missouri, for the reason that the matters were adjudicated by order.

March 25: Order approved authorizing the Avon Telephone Co. to sell all its property and the Intra-State Telephone Co. to purchase property for the consideration of $35,000, upon conditions set forth in order; and granting to Intra-State Telephone Co. a certificate of convenience and necessity for the construction, operation and maintenance of a telephone system and for the transaction of a telephone public utility business in the territory now served by the existing system of the Avon Telephone Co.

March 25: Order approved amending order entered on March 11, 1930, insofar only as to authorize the Illinois Commercial Telephone Co. to issue and sell in lieu of the bonds specified in order $500,000 aggregate principal amount of its first mortgage gold bonds, "Series B" dated March 1, 1930, maturing March 1, 1960, bearing interest at the rate of 5 per cent per annum to be issued and secured by first mortgage or deed of trust dated March 1, 1928.

March 25: Order approved extending until October 4, 1930, period of suspension of the proposed advance in rates for telephone service in Shumway and vicinity, stated in schedule Ill. C. C. 1, of Shumway Mutual Telephone Co.

March 25: Order approved suspending until August 9, 1930, proposed advance in rates for telephone service in New Athens, St. Clair county, stated in rate schedule Ill. C. C. 1, first revised sheet 1 of the Southwestern Bell Telephone Co.

March 25: Order approved amending order entered on October 9, 1929, and authorizing the Illinois Bell Telephone Co. to place in effect a modified schedule of rates to be designated as Ill. C. C. 4, covering telephone service in Edwardsville and vicinity, effective April 16, 1930, providing for the following monthly rates: Individual business $5.25; two-party business, $4.50; business extension, $1.25; individual residence, $2.75; two-party residence, $2.25; residence extensions, $0.75; rural business, $3; and rural residence, $2; and cancelling rate schedule Ill. C. C. 3, of company applying to rates for telephone service in Edwardsville and vicinity.

March 27: Illinois Allied Telephone Co. filed application for authority to acquire the property of the Bureau County Independent Telephone Co. and to issue stocks and bonds to the selling company in exchange. The Bureau company operates exchanges in Princeton, Spring Valley, Tiskilwa, Ohio, Lado, Lamoille, Sheffield, Dover, Wyanet, Manlius and Walnut.

April 9: Hearing at Springfield before Chairman Hadley in the matter of the supplemental application filed by the Corn Belt Telephone Co. for an order making the present increase of 25 cents per month per station for telephone service permanent and establishing the present effective rates as its just rates and relieving the company of all accounting provisions and separate fund provisions contained in previous orders of the commission.

April 9: Hearing at Springfield in the matter of the application by the Corn Belt Telephone Co. for authority to issue $200,000 of its common capital stock and $100,000 of its first mortgage 6 per cent serial gold bonds and the execution of its deed of trust to Chicago Trust Co.

April 9: Hearing at Springfield before Commissioner Gilbert in the matter of the proposed advance in rates for service of the Illinois Northern Telephone Co. in Macomb, McDonough county, stated in rate schedule Ill. C. C. No. 2, filed by the company.

April 9: Hearing in the matter of the proposed advance in rates for service of the Automatic Home Telephone Co. in Pontiac, Livingston county, stated in rate schedule Ill. C. C. No. 5, sheet 5A, filed by the company.

April 9: Hearing in the matter of

application for the approval of lease of floor space in the Illinois Bell Telephone Co.'s exchange building located at 214 North Main street in the city of Rockford to the American Telephone & Telegraph Co. for a term of three years and two additional years thereafter, at the annual rental of $2,919.27.

INDIANA.

March 28: Coatesville Telephone Co. authorized to purchase the Coatesville Telephone Exchange and several rural lines in that section.

March 28: Winona Telephone Co. filed petition asking authority to abandon its exchange at Tyner and to subdivide these patrons to Walkerton, Plymouth and Hamlet. The petition states the overhead expenses are excessive.

March 31: Petition filed by People's Co-operative Telephone Co. of Manson, Clinton county, asking for increased rates because of damage to property during the sleet storm in January. The petition stated that present revenues are insufficient and asked that the added revenue be used as a depreciation reserve fund, for rebuilding and rehabilitation.

KANASAS.

March 24: Haverill Cooperative Telephone Co. granted permission to sell its property to M. E. Smith, who was authorized to operate the property.

MINNESOTA.

March 31: Farmers Telephone Co. of Dunnell authorized to sell its property to W. V. Leach, the property to be operated under the name of Dunnell Telephone Co.

April 15: Hearing at Lanesboro in the matter of the application of the Farmers & Merchants Telephone Co. for authority to change its schedule of rates at Lanesboro.

April 16: Hearing at Lewiston in the matter of the application of H. E. Wirt and the Winona County Telephone Co. for consent to the sale and transfer from Mr. Wirt to the Winona County Telephone Co. of the following rural properties: Lewiston Rural Telephone Co., Bethany Rural Telephone Co., Big Five Telephone Co., Fremont Telephone Co., Utica Telephone Co., Warren Rural Telephone Co., Wyattville Telephone Co., Telephone Line 55 and Telephone Line 68.

April 23: Hearing in the matter of the application of the Winsted Telephone Co. for authority to change its schedule of rates at Winsted.

June 24: Hearings on valuation of Tri-State Telephone & Telegraph Co. properties on request of the company that it needed more time to take a physical inventory, postponed from April 8.

MISSOURI.

March 25: Application filed by Western Telephone Corp. of Mo. to file collection rules and service connection rules at its West Plains exchange.

March 25: Application filed by Osgood Switchboard Co. of Osgood and Farmers Telephone Co. of Milan to file toll rate between Osgood and Milan.

March 29: Proposed new schedule of rates to be charged by the Scotia Telephone Co. for exchange service at Washington, filed.

April 18: Hearing on application of Inter-County Telephone Co. to file exchange tariff for telephone service at Altamont, Gallatin, Pattonsburg, Coffey and Jamison.

April 18: Hearing on application of Inter-County Telephone Co. to file exchange tariff for service at Amity, Clarksdale, Fairport, Maysville, Osborn, Santa, Rosa, Stewartsville and Weatherby.

NEW JERSEY.

March 24: Approval granted of the

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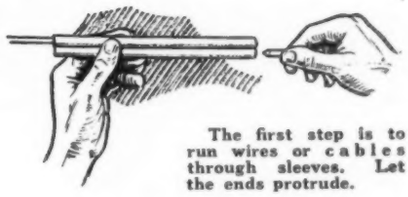
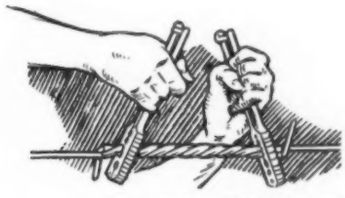
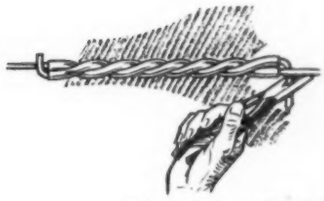


The first step is to run wires or cables through sleeves. Let the ends protrude.

Then bend the ends with pliers, is the second step in making the splice that holds.



Next—make three and a half turns with the pliers on either end—twist tightly.



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NORTH CAROLINA.

March 20: Application dismissed of Granite Telephone Co. for an increase in rates on Granite Falls exchange, Caldwell county. No notice having been received from the mayor of Granite Falls on the petition, the commission substituted a rate scale which it said was in line with rates authorized for exchanges of similar size.

NORTH DAKOTA.

March 20: Joint application filed by Social Telephone Co. and Dakota Central Telephone Co. for authority to sell and buy, respectively, farm lines in Dickey and Sargent counties.

March 21: Sixth revised local exchange tariff, filed by Northwestern Bell Telephone Co., applicable at Wahpeton, cancelling the rate for rural grounded service, approved.

OHIO.

March 28: Ohio Bell Telephone Co. authorized to file revised rate schedules extending to rural territory adjacent to Toledo.

PENNSYLVANIA.

March 22: Crawford Telephone Co., a rural company furnishing service in Woodcock, Richmond, Athens, Randolph, Wayne, Steuben and Troy townships and immediate localities, filed a new tariff schedule making increases in rates effective April 1. The yearly rental is increased from $12 to $15.

WISCONSIN.

March 28: Wisconsin Telephone Co. authorized to place in effect at its Sheboygan Falls exchange for service rendered after April 1, a schedule of increased rates.

April 9: Hearing at Madison on the investigation on motion of the commission of the organization of the Cable Telephone Co. of Cable, the acquisition by it of other public utility property and the proposed filing of rates, rules and regulations by that company.

April 10: Hearing at Ellsworth on the proposed extension of Wisconsin Telephone Co. in Section 35 of the town of Trimbelle, Pierce county.

April 15: Hearing at Collins on the investigation on motion of the commission of the extension of lines of the Rantoul Telephone Co. to serve Robert Olp.

April 16: Hearing at Babcock on the

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application of Babcock Telephone Co. for authority to increase its rates.

April 18: Hearing at Madison on the application of Greenwood Telephone Co. of Greenwood for authority to establish metallic service rates.

April 18: Hearing at Durand on the application of EauGalle Telephone Co. for authority to increase its rates.

April 21: Hearing at Madison on the application of Comet Telephone Co. for authority to dissolve its corporation.

April 22: Hearing at Hollandale in the matter of the investigation on motion of the commission of the rates, rules and practices of Hollandale Telephone Co.

April 23: Hearing at Platteville on the application of Platteville, Rewey & Ellenboro Telephone Co. for authority to increase rates.

April 24: Hearing at Wilton on the application of Union Co-operative Telephone Co. of Wilton for a certificate of convenience and necessity to operate in the village of Wilton.

Statement of the ownership, management, circulation, etc., required by the act of Congress of August 24, 1912, of "Telephony," published weekly at Chicago, Ill., for April 1, 1930.

State of Illinois, County of Cook, ss.—Before me, a notary public in and for the state and county aforesaid, personally appeared S. R. Edwards, who, having been duly sworn according to law, deposes and says that he is the editor of "Telephony" and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher—Telephony Publishing Corp., 608 S. Dearborn St., Chicago, Ill.

Editor—S. R. Edwards, 608 S. Dearborn St., Chicago, Ill.

Managing editor—S. R. Edwards, 608 S. Dearborn St., Chicago, Ill.

Business manager—H. D. Fargo, Sr., 608 S. Dearborn St., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)—H. D. Fargo, Sr., 608 S. Dearborn St., Chicago, Ill.; S. R. Edwards, 608 S. Dearborn St., Chicago, Ill.; H. D. Fargo, Jr., 608 S. Dearborn St., Chicago, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state.)—H. D. Fargo, Sr., 608 S. Dearborn St., Chicago, Ill.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

S. R. EDWARDS.

Sworn to and subscribed before me this 25th day of March, 1930.

(Seal) JULIA C. O'BRIEN.

(My commission expires June 12, 1932.)

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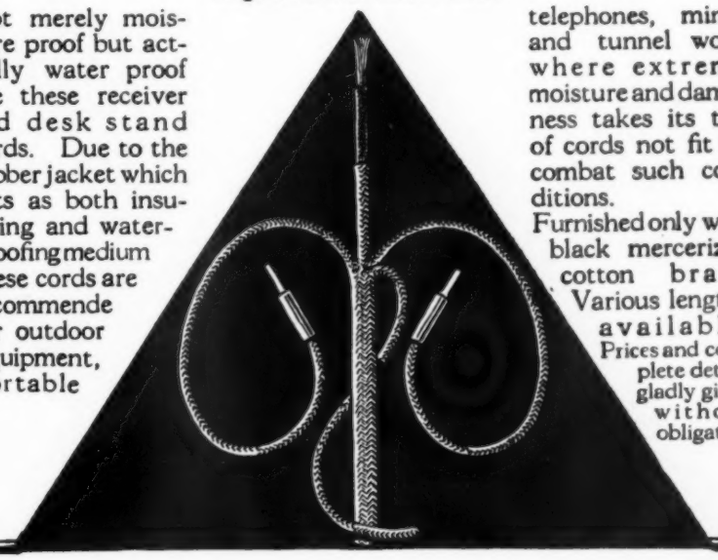

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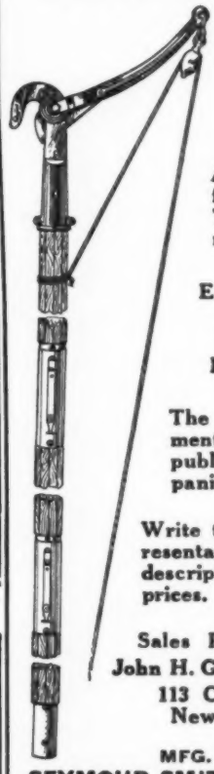

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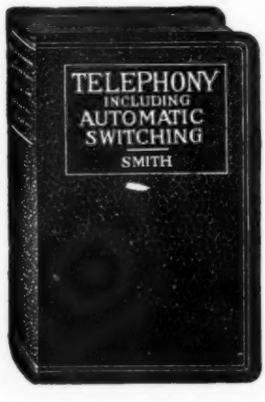

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